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MEETINGS OF STATE PHARMACEUTICAL ASSOCIATIONS.

STATE.	TIME.	PLACE.	LOCAL SECRETARY.
Illinois,	June 8,	Rockford,	H. C. Porter.
Indiana,	June 8,	Lafayette,	D. Holt.
Kansas,	June 9,	Emporia,	D. W. Morris.
Minnesota,	June 9,	Minneapolis,	
Missouri,	June 15,	Sweet Springs,	G. H. C. Klie, St. Louis.
Pennsylvania,	June 8,	Lebanon,	Geo. R. Ross.
West Virginia,	June 8,	Wheeling,	C. Menkemeller.

Pennsylvania Pharmaceutical Association.—The Ninth Annual Meeting of this Association will be held in the Court House, Lebanon, Tuesday, June 8th, commencing at 2 P. M. A room for the exhibition of drugs, pharmaceutical preparations and apparatus has been secured in Fisher's Hall. There will be reduced rates at the hotels. Orders for railroad tickets at excursion rates can be had on application to the Secretary, J. A. MILLER, Harrisburgh, Pa. For further information relative to the meeting, address GEORGE R. ROSS, Assistant Secretary, Lebanon, Pa.

THE AMERICAN
JOURNAL OF PHARMACY.

JUNE, 1886.

NOTE ON THE ESTIMATION OF COCAINE BY MAYER'S REAGENT.

By A. B. Lyons, M. D.

In an article published last October in the Journal, the writer made some statements with regard to the use of Mayer's reagent in estimating cocaine, which, to be of any value, require expansion and qualification. The experiments, although few in number, on which those statements were based, were carefully made, and the conclusions as nearly correct as they could be made in so bald a presentation of the subject. Recurring some time afterwards to the subject, and approaching it from a different quarter, I was led to believe that in reporting my earlier experiments I had made a blunder which ought to be at once corrected. A note was accordingly published in the Journal explaining the nature of the supposed mistake. My later conclusion, however, I find was too hastily drawn, and I owe it to the readers of the Journal to make a new and more complete statement of the facts.

It has been generally assumed that the precipitates produced by Mayer's reagent are double iodides of mercury with the alkaloidal base, having the general formula RI, H_gI_2, R standing for the alkaloidal basic radical. This theory, however, I do not find borne out by fact in the case of most alkaloids, and certainly is not true of cocaine. The precipitates produced, indeed, appear generally to vary in composition under varying conditions, and it is only by accident that the equivalent numbers originally given by Mayer and quoted in all the text books, agree with those found by observation.

On the above hypothesis each c.c. of Mayer's reagent ought to precipitate ·01515 gm. of cocaine, and the precipitate from 0·1 gm. of the alkaloid should weigh 0·292 gm. The weight of the precipitate obtained falls considerable below this, and is not constant. It averages

about 0·246 gm., but accurate weighings are not practicable, since the precipitate cannot be washed with water without loss. The observed variations, however, are too large to be due solely to this cause, and indicate clearly a variable composition in the precipitate itself. The actual weights in five experiments were 0·230, 0·245, 0·248, 0·252 and 0·271 gm. The lowest result was obtained when the reagent was added little by little, the highest when an excess was added at once.

Analysis of some of these precipitates showed that they contained much less than the theoretical proportion of mercury, which would be 0·066 (for 0·1 of alkaloid). At the same time the quantity was too great to comform with the formula $(RI)_2H_gI_2$, or 0·033. The quantity found was about ·043 (in a precipitate weighing 0·252), corresponding with the formula $(RI)_3(H_gI_2)_2$, but containing either an excess of iodine or some adhering potassium iodide from the reagent.

Variability in the composition of the precipitate must necessarily render its use in exact quantitative estimations inadmissible. At the same time, if under similar conditions results approximately identical can be obtained, it may be possible to use it in such approximate estimations as the pharmacist has occasion to make.

The use of Mayer's reagent offers, indeed, a ready means of ascertaining the alkaloidal strength of a complex fluid, of which the pharmacist may avail himself, when time and skill for carrying out an exact quantitative estimation are wanting. It is necessary, of course, to be familiar with the precautions to be observed in the use of the reagent, and to understand the sources of possible error. With a thorough knowledge of these, it may be possible to utilize Mayer's reagent in the practical examination of preparations of coca leaves, and the liability to error is perhaps no greater than in the case of most of the alkaloids estimated by its use.

When Mayer's reagent is added drop by drop to an acid solution containing cocaine (1 : 200 to 1 : 600) there is at first produced a heavy white precipitate which collects at once in curdy masses. After adding a certain quantity of the reagent, it will be found that the filtered fluid, which still gives a heavy precipitate with Mayer's reagent, produces a precipitate also in a fresh solution of cocaine. It is thus evident that precipitation is complete only when a certain excess of reagent is present in the fluid. If reagent is added until precipitation is just complete, it will be found that the fluid does in fact contain a considerable quantity of mercury. The following are some

of the results obtained in actual titrations. In each experiment 0·100 gm. of alkaloid was used.

Dilution, 1 : 200. After adding 4 c.c. of reagent, the filtered fluid began to give a precipitate with cocaine solution. It was not until 5·85 c.c. of reagent had been added, however, that precipitation was complete, and it was then found that the fluid contained mercury corresponding with 0·55 c.c. of reagent.

Dilution, 1 : 400. After adding 5 c.c. of Mayer's reagent, excess was indicated by testing with cocaine solution. For complete precipitation, however, 7·2 c.c. of reagent were required, the fluid being found to contain 2·3 c.c. in excess.

Dilution 1 : 600. For complete precipitation 8 c.c. of reagent were required; excess of reagent not estimated.

In these experiments the solution titrated contained in each case ten minims of 6 per cent. sulphuric acid. The Mayer's reagent actually used in all my experiments was made of one-half the ordinary strength, such a reagent being most convenient for general use.

It was found in general that in all cases there was required for complete precipitation of the alkaloid an excess of reagent amounting approximately to 8·5 per cent. of the solution, and if the precipitate were washed with water not containing Mayer's reagent, it was appreciably dissolved. From a study of the results of numerous titrations I deduced the following rule for interpreting the results of an experiment: 1. Correct the reading from the burette by subtracting, for each c.c. of fluid present at the end of the titration, 0·085 c.c. (if the half-strength reagent is used). The remainder multiplied by 10 will give the quantity of alkaloid indicated, in milligrams. If the Mayer's reagent of full strength is used, a correction of about 0·036 c.c. would have to be applied for each c.c. of fluid at the end of the titration, and the multiple would be 20 instead of 10.

In order that the results obtained shall be at all trustworthy, it is necessary that the reagent be added always in the same way. The first addition should not exceed two-thirds of the entire amount required, and the successive portions should consist of about 0·3 c.c. at a time, until the end of the titration is approached. My practice is to throw the fluid at once on a filter, just large enough to hold it comfortably, and run it through the same filter once or twice after each addition of reagent. This is a much more expeditious method than that of allowing the precipitate to subside, and testing the super-

natant fluid. The quantity of reagent required, no doubt, will be different if this latter method is followed. The filtrate runs through rapidly and perfectly bright. The proportion of acid used, of course, should be always the same, although in this titration the result is not greatly influenced by considerable variations in the proportion of acid.

If no acid is added, the fluid will not filter clear. It is sometimes difficult to tell just when the precipitation should be called complete. My practice is to continue addition of the reagent until two drops fail to produce at once a distinct permanent turbidity. Occasionally, however, it will be found that such a turbidity continues to be produced for some time, without the formation of a weighable amount of precipitate. In such cases one must use judgment, an indispensable factor in all analytical work.

If possible, the solution for titration should have a strength of about 1 part of alkaloid in 400, since the results of titration seem to be more uniform than in solutions either stronger or weaker than this. The results vary most in fluids containing more than 1 in 300.

Some experiments made with a modified Mayer's reagent, containing five equivalents instead of three of potassium iodide, promise greater uniformity than those obtained with the ordinary solution. A considerably smaller quantity of reagent is required, and the influence of dilution is not so great. I am not sure but that in nearly all cases the modified reagent may be substituted for "Mayer" with advantage, but the quantity of alkaloid precipitated by it in general is greater. The addition of a fixed quantity of potassium iodide to the solution before titration has a similar influence. Thus in a solution 1 : 200, requiring of the ordinary reagent about 6 c.c. to precipitate 0·100 of cocaine, it was found that after the addition of 2 c.c. of a 10 per cent. solution of potassium iodide, 5·04 c.c. of the same reagent sufficed. Of the modified reagent, only 4.8 c.c. were required.

The presence of alcohol is of course to be avoided in all titrations with Mayer's reagent. In a single experiment, however, made to ascertain its actual influence with this particular alkaloid, I found that in a solution 1 : 400, 20 per cent. had very little effect. Without the alcohol, 7·17 c.c. of reagent were required. With it, 7·28 c.c. A single experiment with glycerin seemed to show a greater influence, the quantity of reagent required being only 6·8 c.c.

Confessedly the results to be expected in the use of Mayer's reagent

for estimation of cocaine are lacking in exactness. A variation, under conditions as nearly identical as are likely to be secured in ordinary practice, amounting to 10, and even 15 per cent. of the whole quantity of alkaloid present is not uncommon, where the solution titrated is too much concentrated. Still it may be that an attempt to separate the alkaloid by other assay processes, such as are commonly adopted, will involve even greater possibilities of error, except in experienced hands, and a result which may be relied upon within even so wide a range has positive value. A more important question is: Can the titration method be applied to the fluid extract, tincture, etc., of coca leaves so as to yield useful results? This involves the question whether there is present in the drug more than one alkaloid, and if so, whether the alkaloids differ from one another greatly, (*a*) in physiological action, and (*b*) in their deportment with Mayer's reagent. We are not yet sufficiently familiar with the chemistry of the cocaine alkaloids to answer these questions. I find that the quantity of alkaloid indicated by Mayer's reagent in coca leaves and their preparations is considerably greater than the quantity of cocaine I have been able to extract by washing out the alkaline solution with ether. Chloroform will extract an additional amount of alkaloid, but the total alkaloid extracted falls short of what is indicated by Mayer's reagent—generally in the neighborhood of two per cent., estimated as cocaine. The cause of the discrepancy calls for investigation which I have not been able to give to it. As long as the subject is so imperfectly understood, I prefer to depend on actual weighings of alkaloid, but the separation from a complex fluid of an alkaloid so sensitive to the action of acids and alkalies is a matter of no little difficulty, and I am inclined to believe that experience will show that the comparative value of fluid extracts, for example, of coca leaves—can be practically ascertained by the use of Mayer's reagent.

Instead of depending on titration, in case we have to deal with solutions of the alkaloid, we may collect the precipitate on a double filter, wash slightly, in such a way as to wash the filters more than the precipitate, dry and weigh. The weight of the precipitate multiplied by 0·406 will give, quite closely, the weight of alkaloid present.

If titration is preferred, and Mayer's reagent of one-half strength is used, we may adopt the following values for the equivalent of the reagent:

Strength of Cocaine Solution.	1 c.c. of Mayer's Reagent, ½ strength, precipitates of Cocaine:
1 : 200	0·0062
1 : 300	0·0066
1 : 400	0·0070
1 : 500	0·0074
1 : 600	0·0078

Or, we may make the correction for excess of reagent as already explained. The following table may also be of service in interpreting results :

Quantity of Mayer's reagent, ½ strength, required to precipitate a given quantity of cocaine.

Quantity of Cocaine.	Measure of Fluid titrated 5 c.c.	Measure of Fluid titrated 10 c.c.	Measure of Fluid titrated 15 c.c.	Measure of Fluid titrated 20 c.c.
·010	1·6			
·020	2·7	3·1		
·030		4·2	4·6	
·040		5·3	5·7	6·2
·050		6·4	6·8	7·3
·060			7·9	8·4
·070			9·0	9·5
·080				10·6
·090				11·7
·100				12·8

Results of any titration higher or lower than those included in the table are beyond the limits of dilution or concentration admissible, and would call for repetition of the experiment. In conclusion I will only add that cocaine is by no means exceptional in its deportment towards Mayer's reagent, and the calculation of results requires in all cases an application of similar principles.

APRIL 28, 1886.

Pereirine in Intermittent Fever.—Dr. Clemente Ferreira, of Brazil, (*Bullet. gén. de Thérap.*, April 15, 1886), reports a number of cases of intermittent fever treated successfully with hydrochlorate of pereirine after quinine and arsenic had been tried in vain. He administers thirty grains, divided into four doses, beginning four hours before the expected chill, half an hour being allowed to intervene between the doses. This effectually prevents the paroxysm, which, however, may return on the following day. On the third day, the medication is repeated as before, and after that the fever does not reappear. The value of pereirine, according to the writer, is equally great in the treatment of irregular paludic manifestations.—*N. Y. Med. Jour.*, May 8, 1886.

ON THE ACTIVE PRINCIPLE OF POLYGONUM HYDROPIPER.

By C. J. Rademaker, M. D.

In the January number of the American Journal of Pharmacy, of 1885, I saw an account of the analysis made by Prof. Henry Trimble and Herman J. Schuchard, the subject being Polygonum Hydropiper, or smart-weed. There is nothing original about the analysis, for it is merely a following of Dragendorff's scheme for proximate analysis, and is very imperfectly executed by them. According to their analysis, smart-weed contains no crystalline substance, and, according to their statement, if it does contain any, it is decomposed by the slightest heating. They also state that the acid, which I called polygonic acid, and which I first isolated in 1871, was a mixture of impure tannic and gallic acids, together with a small amount of coloring matter. I regret exceedingly that necessity compels me to differ with the able gentlemen in regard to the active principle of this drug. Prof. Trimble, I understand, read his article on Polygonum Hydropiper before the Philadelphia College of Pharmacy, and said learned body referred it for publication. It is impossible for me to comprehend why said body referred it for publication.[1]

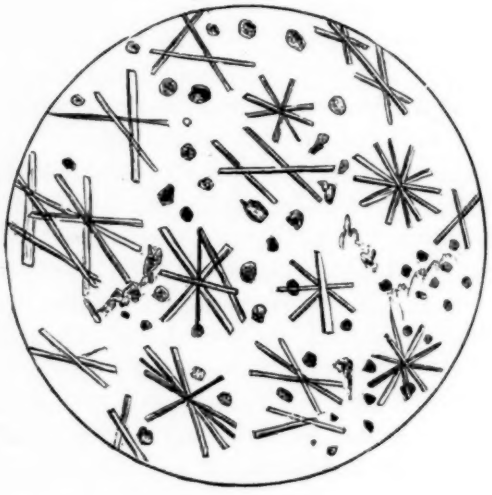
I have used Polygonum Hydropiper as an infusion and as a fluid extract, medicinally, for a number of years, with such very satisfactory results that I was induced to isolate the active principle. That principle is polygonic acid, and the physiological action of this acid I found the same as the infusion or fluid extract; from which I concluded that the acid was the active medicinal principle of smartweed.

Preparation of Polygonic Acid.—This acid may be prepared by treating smart-weed with water, to which some bicarbonate of sodium has been added, and allowing to macerate for twenty-four hours. Or, by precipitating a fluid extract of smart-weed with basic acetate of lead. In each case separate the base by means of sulphuric acid, and the organic acid by means of ether. Allow the ethereal solution to evaporate and treat the residue with distilled water, and filter; this separates the resin (resinous acid). The filtrate is then filtered through

[1] It is well known that no scientific body is held to endorse the statements made in papers read before such body; and that no scientific journal is considered to be responsible for the opinions expressed, or the conclusions arrived at, by its contributors—as a matter of course personalities always excepted.—Editor Am. Jour. Phar.

animal charcoal repeatedly, until all coloring matter is removed. The filtrate is then treated with a solution of gelatin, in order to remove any tannic acid that might be present, again filtered and evaporated to dryness, redissolved in ether and the ethereal solution allowed to evaporate spontaneously.

Polygonic acid thus prepared crystallizes in needles (see figure).



Polygonic acid from ethereal solution. X 700.

Its solution in water does not precipitate gelatin nor produce a bluish green discoloration when added to a mixture of ferrous and ferric salts in solution, showing absence both of gallic and tannic acids. It is freely soluble in water, less so in ether, and insoluble in petroleum spirit. The heat of a water-bath does not destroy any of its properties.

I may state here that the smart-weed employed by me was not selected by "an expert botanist fully familiar with the requirements of the case," but was selected by myself; therefore I know there can be no doubt whatever about the species of smart-weed employed in my analysis.

Now, as I have shown that polygonic acid is not identical with tannic and gallic acids, it remains for the learned investigators to explain how it happened that they made such an unpardonable mistake. I presume it was due to imperfect manipulation.

LOUISVILLE, KY.

CHLORAL-HYDRATE.

(Abstracts from Theses.)

Examination of Commercial Specimens.—Charles Erastus Week, Ph.G., examined six different specimens, made by four manufacturers, applying first the tests of identity given in the Pharmacopœia, with which all the samples fairly agreed. Dissolved in diluted alcohol, one sample showed no reaction on blue litmus paper, while a faint acid reaction was observed with one, and a more decidedly acid reaction with four samples. On acidulating the solutions with nitric acid and testing with nitrate of silver, one was not disturbed, while the other five were rendered more or less turbid. Warmed with an equal volume of sulphuric acid, all the samples liquefied without becoming black; and, on evaporating the mixture by heat, no residue was left. On treating the warm aqueous solution with potassa solution, and the clear filtrate with iodine until it acquired a yellow color, no yellow precipitate took place on standing, but a very faint odor of iodoform was observed from three of the samples, while the remaining three samples gave, on standing, also slight precipitates.

Three specimens of chloral-hydrate, examined by Joseph V. Roberts, Ph.G., were found to be free from alcoholate by the total absence of a precipitate of iodoform after proper treatment. Two of the samples were neutral to test paper, in diluted alcohol solution, and gave no turbidity with silver nitrate, while a precipitate was produced with the third specimen, the reaction of which was decidedly acid.

Chloral-hydrate and Phenol.—The liquefied mixture of the two compounds was placed in a freezing mixture by J. V. Roberts, but did not congeal; the hot aqueous solution, treated with ammonia and nitrate of silver, readily gave a metallic mirror.

Chloral-hydrate and Camphor.—The results of the experiments were the same as in the preceding case.

Poisoning by Camphor.—Dr. J. P. Ryan (*Austral. Med. Jour.*) reports the case of a lady, who suffered from poisonous symptoms on eating a piece of camphor, which weighed about 20 grains. She began eating the camphor at two o'clock, passed through a condition resembling intoxication, and at three was nearly unconscious and in a semi-collapsed state. She was treated with 20 grains of zinc sulphate, which was followed by free vomiting, and afterwards with ammonia and strong coffee. The interest of the case lies in the smallness of the amount which could have been absorbed, and which is considerably under the amounts given for prescription in Wood and Ringer.—*Med. Chronicle*, Jan. 1886.

CHLORAL-CAMPHOR.

By Charles W. Albright, Ph.G.

(Abstract from a Thesis.)

Chloral-hydrate and camphor were mixed in different proportions. The mixture made with 1 p. of the former and 7 p. of the latter was slightly damp after seven days, but could easily be rubbed to powder; made with 3 p. of camphor, the powder became granular in a day; and with 2 p. of camphor, it was not only granular, but showed also the presence of a thick liquid. Equal parts of the two compounds soon became liquid; but, with an increase of the chloral-hydrate, a white powder remained in the liquid, and when the proportion reached 7 of chloral-hydrate to 1 of camphor, the pasty opalescent mass separated gradually a thick, oily liquid.

The liquid obtained from equal parts of the two compounds, on being agitated with water, does not decrease in bulk. It distils slowly without change and without leaving any residue when heated in a bath of ammonium chloride; but, when direct heat was applied, a portion of the oily liquid distilled over unaltered, and was followed by a white, camphor-like sublimate, which was soluble in alcohol, from which solution, on the addition of water, a thick, oily liquid was precipitated. The yellowish-brown residue in the retort gave, with alcohol, a colorless solution, which had an odor of a mixture of chloral, camphor, and cedar, and, with water, gave an oily precipitate. Chloral-camphor dissolves in 60 per cent. alcohol, and, on the addition of water, is again deposited unchanged.

On mixing solutions of chloral-hydrate in 5 p. of water, and of camphor in 5 alcohol, the mixture remains clear; but, on the addition of water, becomes turbid, and, finally, deposits an oily liquid, like that resulting from direct union. Substituting chloroform for the alcohol, the mixture of the two solutions separates into an aqueous and a denser layer, the latter, on the spontaneous evaporation of the chloroform, leaving oily chloral-camphor.

On treating chloral-camphor with glycerin, and then with water, a white flocculent mass is obtained, answering to all the tests of camphor. On boiling a mixture of equal parts of chloral-camphor, glycerin and water, an upper layer is formed, which gelatinizes on cooling to an opaque, greasy mass, which is liquefied by the heat of the hand. On boiling equal parts of glycerin and chloral-camphor in

a test-tube, a clear liquid results, which, on cooling, becomes opaque and so nearly solid that the tube may be inverted without the mass falling out; this is soluble in alcohol, though less freely than chloral-camphor, this oily compound being deposited on the addition of water.

Mixed with strong sulphuric acid chloral-camphor forms a clear liquid, passing through various shades of yellow, red, and brown, becoming nearly black, and gradually separating above small crystals uniform in shape, which, in contact with water, become liquid and sink to the bottom in globules. The acid mixture has a peculiar fragrant odor.

Nitric acid dissolves a portion of chloral-camphor, assuming at the same time a greenish-yellow color.

CHLORAL AND MENTHOL.

By Harry Vane Becker, Ph.G.

(From an Inaugural Essay.)

Menthol is usually applied in the form of cones or pencils, and from time to time solutions in alcohol, benzin, chloroform, ether, olive oil, glycerin, &c., have been suggested. The author suggests a combination of menthol with chloral-hydrate, which is prepared from equal weights of the two compounds, triturating them together and heating in a water bath not above 96° F., until complete liquefaction is effected. Thus prepared, chloral-menthol is an oily, colorless liquid, having a distinct mint-like odor, a warm aromatic and camphoraceous taste, and at 58° F. the specific gravity 1·1984. It is completely soluble in all proportions in alcohol, freely so in benzin, and also soluble in chloroform, ether and carbon bisulphide. A few drops of the liquid brought in contact with an equal quantity of sulphuric acid, gave off almost immediately a disagreeable odor, the mixture becoming yellow, then orange in the centre, and on the border surrounded by a greenish, then green band, which soon darkened. On being now stirred with a glass rod, the mixture is blue, and dissolves in alcohol with little or no color; the solution neutralized with potassa and heated, acquires a straw color, potassium sulphate being precipitated. If the mixture of oily liquid and acid be kept for some time, two layers are formed, one being dark green, the other nearly colorless; on agitation with water, the latter is dissolved, leaving a dark green unctuous mass.

Menthol melting near 92° F. the preparation is regarded as a solution of chloral-hydrate in liquefied menthol, the mixture remaining liquid.

Chloral-menthol was used by several physicians, with favorable results. Dr. L. Wolff was much pleased with its effects in several cases of facial neuralgia, and regards it as superior to menthol pencils and to chloral-camphor; while it burns and smarts to some extent, this is considerably modified by the cooling action of the menthol. Dr. L. W. Steinbach observed some relief from its use in a case of headache due to gastric disturbance. Dr. C. Seiler found it more decisive than menthol cones in subduing the pain of neuralgia of the temporal region; it produces more smarting, which, however, is not disagreeable. Dr. E. Rosenthal considered it useful in every form of neuralgia; in decayed teeth, applied with absorbent cotton, the pain was allayed in from one to five minutes; it was also used with benefit in migraine, in headache due to biliousness, and in headache due to uterine disease.

PHARMACEUTICAL NOTES.

(Contributed by the School of Pharmacy of Purdue University.)

(Concluded from May Number.)

IX. Liquor Calcis.—by M. Jay.

Ten samples of lime water, procured from Lafayette druggists, were examined. 50 c.c. of each were titrated with decinormal hydrochloric acid, and the following percentages of calcium hydrate were found:—

No. 1	0·103 per cent.	No. 6	0·155 per cent.
No. 2	0·142 "	No. 7	0·160 "
No. 3	0·142 "	No. 8	0·161 "
No. 4	0·145 "	No. 9	0·165 "
No. 5	0·150 "	No. 10	0·171 "

The mean value is 0·149 per cent.

X. Oleata.—by L. H. Schulmeyer.

Oleate of mercury of the Pharmacopœia is a 10 per cent. solution of the yellow oxide in oleic acid. Solutions of 6 to 20 per cent. are easily made by simply mixing the oxide and acid, and with the aid of a gentle heat combination will soon take place. They will also unite

without heat by simply triturating them together and allowing them to stand with occasional stirring, from one to three days. It has been found, however, that the oleate of mercury is very unstable. It soon deposits metallic mercury on standing; the weaker the solution the more rapid the decomposition.

I have made this oleate from the yellow and also the red oxide of mercury, with and without heat. I found no difference in the keeping qualities or appearance, and both salts are similarly soluble in the acid. Sometimes, however, trouble is experienced in dissolving the yellow oxide, especially when it is old and has been exposed to the light. Of those made with and without heat, I find the latter keep longer. The 5 per cent. and 10 per cent. preparations made with heat began to show signs of decomposition four weeks after being made, while those made without heat were still good and gave no signs of change.

I also made oleate of mercury by double decomposition. The red oxide of mercury was dissolved in excess in dilute nitric acid by boiling, filtering out the solution of mercuric nitrate, and then slowly adding it to a filtered solution of soap with constant stirring. The solution first becomes milky, then a precipitate begins to fall; the mercuric nitrate is added until the solution becomes very nearly clear again, this leaves a slight excess of the soap in solution. The precipitate is now washed with warm water and dried. Thus prepared it is of a light yellow or cream color, very nearly white, of a rather stiff consistence and contains 28 per cent. of oxide of mercury. It keeps very well. A 10 per cent. oleate of mercury made from this differs somewhat in appearance from the other, having a much clearer yellow color, while those that are made by combining the oxide of mercury and oleic acid, have a whitish milky appearance, which I suppose is due to the water formed in the reaction and which remains in the finished oleate.

The oleates made by double decomposition keep very well if carefully made, but the method by direct combination is recommended, as it takes less time and care. The soap solution necessary for making oleates by double decomposition is best made by taking a good quality of oleic acid and adding just enough solution of sodium hydrate to saponify it, the slight excess of sodium hydrate being neutralized with tartaric acid. It is best to use this solution rather dilute, about eight ounces of water to one ounce of oleic acid. The other officinal oleates can best be made by precipitating the soap solution with some soluble salts, as sulphate of copper, acetate of lead, acetate of zinc, etc.

The oleate of arsenic is most likely only a name for a solution of slight traces of arsenic in soap, as I have been unable to make an oleate by the different methods published.

Oleate of veratrine is the only other officinal oleate, and it as well as the other oleates of alkaloids, are easily made by simply dissolving the alkaloids in the acid.

XI. Potassii Bitartras.

Specimens of bitartrate of potassium procured from twelve druggists were submitted for examination (under careful oversight) to members of the junior class.

While the limits of impurity are fixed at a "turbidity" caused by barium and silver salts, few specimens will meet a rigid interpretation of the requirements. Not more than one or two of the twelve samples, however, seemed to have enough sulphate to be called an actual impurity, while only one contained a questionable amount of chloride. The tests for calcium were made in Nessler tubes, resting upon a fine dotted line on white paper; the fluid was considered "cloudy" when the dots were obscured, and "turbid" when printed letters were indistinguishable. With this interpretation of the pharmacopœial test, seven samples were pronounced good, one was fair, and four were questionable. Two samples gave unmistakable reactions for starch.

A thirteenth sample (expressly sold as a cheaper grade) had a decided excess of sulphate and a questionable amount of calcium.

Two samples were also procured from a manufacturer, who offers "pure cream of tartar," in small lots, at 45 cents per pound, and various sophistications, at prices to suit the demand of grocers, down to 14 cents. One of these samples was unobjectionable, except in containing more than the average amount of sulphate and chloride; while the other, on treatment with water, leaves an insoluble residue of calcium sulphate (amounting to 62·4 per cent. after ignition), and the aqueous extract from a weighed quantity neutralized only one-sixth as much alkali as an equal weight of bitartrate of potassium. See further details in *Indiana Pharmacist*, iv, 300 (Feb. 1886).

XII. Potassii Nitras.

A careful examination shows that when genuine saltpetre (nitrate of potassium) is offered for sale, it is practically free from all impurities, except traces of chloride, as indicated by numbers 1 to 8. There are,

however, three spurious preparations sold under the name of commercial saltpetre. Number 9 is essentially nitrate of sodium (sometimes called Chili saltpetre); number 11 is chloride of sodium in angular transparent lumps (or "rock salt"); and number 10 is a mixture of both.

The examination was conducted under my direction by Mr. E. G. Eberhardt and other students of the School of Pharmacy.

REACTIONS OBSERVED.

Reaction with Nitrate of Silver.	
GENUINE.	
No. 1, Opalescence.	These samples were all white powders or colorless translucent lumps, except a yellow tinge in No. 5 and No. 6; solutions of all were neutral to litmus, gave distinct VIOLET color to flame and remained clear on the addition of sulphide of ammonium, carbonate of ammonium, oxalate of ammonium, and chloride of barium. No. 8 was a selected crystal.
No. 2, Precipitate.	
No. 3, Slight Prec.	
No. 4, Slight Opal.	
No. 5, None.	
No. 6, Slight Opal.	
No. 7, Slight Opal.	
No. 8, Slight Preci.	
FALSE.	Solutions of these samples were neutral with litmus, gave bright YELLOW color to the flame, and remained clear on the addition of sulphide and carbonate of ammonium; but chloride of barium and oxalate of calcium showed traces of sulphate of calcium in No. 11, and still more in No. 10.
No. 9, Opalescence.	
No. 10, Heavy Prec.	
No. 11, Heavy Prec.	

Remarks on Genuine Saltpetre.—The eight samples of nitrate of potassium examined, conformed very closely to the requirements of the Pharmacopœia; but two of them had a tinge of color, and four had excess of chloride. Being uncertain whether the reaction of number 1 with silver nitrate exceeds the official limit of "faint opalescence," I had the chloride estimated with decinormal solution of silver nitrate, finding only 0·08 per cent. Number 2, by the same process, contained 0·55 per cent, and number 3, 0·25 per cent. It may be asked whether so small an amount of chloride as 0·5 per cent. can be a practical objection to the use of saltpetre, even for the preparation of diluted nitrate of silver, a considerable proportion of chloride of silver being purposely formed in the preparation of moulded nitrate of silver. The complete purification of saltpetre inevitably adds considerably to its cost of manufacture; but it is desirable that the pharmaceutical profession should either maintain the official standard as nearly as possible, or should express their desires for more latitude through the Committee on Revision of the Pharmacopœia.

The so-called "Commercial Saltpetre."—The wide range of prices among the several brands of genuine saltpetre is insufficient to meet all demands, and venders of horse medicine require a cheaper article to mix with their "black antimony,"[1] etc. Nitrate of sodium (which is largely imported from Chili, as a fertilizer) is naturally suggested as a substitute. The deliquescent character of this salt is well known, making it unfit for ordinary gunpowder. It would probably be unsatisfactory in curing meat, and should not on any account be substituted for nitrate of potassium in filling prescriptions. Number 9 consists of coarse lumps or crystals of this salt, many of them showing plainly in crystalline form that they are not the genuine or "prismatic" saltpetre. Some pieces were white, others were stained on the outside with a reddish tinge, but both kinds were nearly free from chloride.

Number 10 was given to me with the statement that it was merely rock salt, used as a substitute for saltpetre. It proved, however, to contain two distinct materials in coarse lumps mixed together. Some of these, which could easily be distinguished by their similarity to number 9, proved to be nitrate of sodium. After careful washing, these were dissolved, and gave a mere turbidity with nitrate of silver and very slight opalescence with oxalate of ammonium. The other material, which gave no reaction for nitric acid, was chloride of sodium, with traces of sulphate of calcium. Many imperfect crystals were marked by faces meeting at right angles. After careful sampling number 10 was found to contain 75·4 per cent. of chloride.

Number 11 consisted of rock salt alone, with a less proportion of calcium sulphate than the lumps of salt in number 10.

The samples of nitrate of sodium were also tested for iodine with negative results.

Conclusions.—So far as observed, the goods offered as pure saltpetre contain no impurities which are likely to be hurtful, but druggists should be careful to purchase from reliable houses, and never to dispense as saltpetre that which will impart a yellow color to an alcohol flame.

Those who have occasion to use "commercial saltpetre" should note whether it is nitrate or chloride of sodium, or a mixture of both.

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[1] See report on Antimonii Sulphidum, above.

Fortunately, these are very readily distinguished by the taste, if only one is present, and the separate lumps may sometimes be distinguished in the mixture. If each article could be sold under its true name, much confusion might be avoided.

XIII. Syrupus Ferri Iodidi.—by E. J. Mowry.

History.—Iodine was discovered by Courtois in 1812, and used in medicine by Dr. Coindet in 1819. Iodide of iron was used by Dr. Pierquin in 1824. Durand (*Journal of Pharmacy* for Jan., 1833) gave his method for preparing "Dr. Jackson's solution of Iodide of Iron," which contained no sugar and was very unstable. The addition of saccharine matter was suggested by Frederking (*Buchner's Repertorium der Pharmacie*, 1839, vol. lxv, p. 370), and experiments were made by Procter (Am. Jour. Phar., April, 1840) upon the use of sugar of milk, manna, cane sugar, honey and uncrystallizable sugar. The first two have little protective power. "Syrup of gum" was used by Dupasquier (*Jour. de Pharmacie*, March, 1841), and simple syrup by Béral (Am. Jour. Phar., April, 1841). It was found impossible to keep solid iodide of iron; Squire recommended the addition of a wire coil to the solution, but a lady patient wanted to know whether the iron screw must be swallowed whole! Thompson succeeded in preserving the iodide in strong syrup, which, he says, may be exposed to air and light, and may be combined with astringent vegetable infusions, etc., or with dilute mineral acids.

T. & H. Smith (Am. Jour. Phar., June, 1847) favored protection from air and light. Tozier (Am. Jour. Phar., Jan., 1853,) and Crew (Am. Jour. Phar., Jan., 1854), give directions for quickly preparing the syrup. Maisch (Am. Jour. Phar., Sept., 1854 and May, 1855), details numerous experiments, showing that the action of light is desirable, if air is excluded, and that oxide of iron, which has been precipitated in aqueous solution, may be again dissolved by the action of sugar in the sunlight.

Groves (*Lond. Phar. Jour.*, March, 1868) proved that dilute phosphoric or sulphuric acid preserves the syrup, and he recommends ½ ounce of the former to 31 ounces of cold syrup.

Squibb (Am. Jour. Phar., March, 1868) restored a discolored syrup by solution of hyposulphite of sodium; 15 to 20 grains were dissolved in an ounce of water, and 15 to 20 minims of this solution were sufficient for 1 pound of syrup not darker than brown sherry

wine. Jeannel (*Jour. de Phar. et de Chim.*, Nov., 1868) recommends tartaric acid for the same purpose.

Rother (*Druggists' Circular*, Dec., 1885) objects to the carbon in iron filings, and insists upon the addition of some sugar to the mixture generating the iodide to prevent the formation of insoluble ferric oxysalts. He also recommends the addition of 120 minims sulphurous acid to 22 fl. ounces of filtered syrup. Robinson (abstract in *Phar. Rec.*, Oct., 1885) found sulphite of sodium, phosphoric acid, phosphorous acid, sulphurous acid and hypophosphites to be unsatisfactory, while the addition of 1 per cent. hypophosphorous acid was sufficient to preserve a solution that was eight times the strength of official syrup, freely exposed to the air for two months.

Preparation.—Dr. Squibb (*Proceedings A. P. A.* for 1873, p. 189) suggests some modifications of the pharmacopœial process of 1870. Following these hints, the writer heats the sugar on a water bath, and filters into it the warm solution of ferrous iodide. As the sugar begins to dissolve, the point of the funnel is lowered into the syrup formed; the sugar is completely dissolved when the filtration is ended. Boiling water is added to make up the required amount, and small vials are completely filled with the hot syrup. The straining of the syrup should be avoided, by the use of pure sugar, clean lumps of cut loaf sugar being preferred.

The experiments, described above, with sulphurous and hypophosphorous acids, to preserve the syrup, have given very satisfactory results; but if pure materials are used, and the syrup is bottled while hot, no protection is needed except good corks.

Commercial Samples.—Maisch (AMER. JOUR. PHAR., May, 1857) discovered copper in a sample sent him for restoration, and further observed that the iodides of lead, silver and mercury are soluble in syrup of iodide of iron. Shenstone (*Pharm. Jour. Trans.*, April 3, 1875) traced the occurrence of lead to an enameled vessel used in preparation. Tschirner (AMER. JOUR. PHAR., June, 1875) reports upon the examination of samples purchased in San Francisco, varying in strength from 10 to 46 grains of iodine to the fluid ounce,

The writer has tested thirteen samples as directed by the U. S. P., making duplicate volumetric determinations of strength. Nos. 1–6 were said to be from reputable manufacturers; Nos. 7–12 were made in Lafayette; and No. 13 was made by the writer in the Purdue laboratory.

No. of sample.	Reaction for free iodine.	Per cent. of ferrous iodide.	
1	None.	6·01	
2	Slight.	5·16	
3	Distinct.	5·08	
4	None.	4·37	Mean value, 4·82 per cent.
5	None.	4·04	
6	Slight.	4·26	
7	None.	8·26	
8	None.	8·48	
9	Slight.	8·42	
10	None.	8·30	Mean value, 8·44 per cent.
11	Very slight.	10·24	
12	None.	6·94	
13	None.	10·10	

Nos. 7 and 13 were of a transparent pale green; the rest were either colorless or contained free iodine. The U. S. P. requires 10 per cent. of ferrous iodide; and the data in the table speak for themselves.

XIV. Tinctura Nucis Vomicæ.—by E. J. Yeager.

Variations in strength of the crude drug and of extractive have been clearly shown by Dunstan & Short, A. B. Lyons and Dragendorff, so that assays of total alkaloid instead of extractive, are recommended.

The general plan for separating the alkaloids is as follows: A convenient quantity of tincture or percolate is evaporated nearly to dryness, treated with dilute sulphuric acid, and shaken with chloroform or a mixture of chloroform and ether, to remove a part of the extractive. After separation of the chloroform, the acid solution is washed with successive portions of chloroform or the mixture; it is then made alkaline with ammonium hydrate and treated with successive portions of chloroform or chloroform and ether, to dissolve out the free alkaloids, to be evaporated, dried and weighed in a tared capsule. Dunstan & Short use chloroform throughout the whole process; but Dr. A. B. Lyons (*Druggists' Circular*, Dec., 1885) uses ether for the first two washings of the acid liquid, and one volume of chloroform with three of ether for a third washing; he also treats the alkaline liquid twice with this mixture to extract the alkaloids.

The method of Dunstan & Short was tested (with smaller portions of material and more frequent washing) by comparative experiments

with fluid extract of buchu alone, and with the same quantity of extract to which 0·100 gm. sulphate of strychnine or brucine had been added, representing 0·075 gm. of free alkaloid. Five c.c. of this fluid extract (containing at least as much extractive as 25 c.c. tincture of nux vomica) were evaporated in each case and treated with 15 c.c. chloroform, 15 c.c. dil. sulphuric acid, and 15 c.c. of water. The washing was repeated twice with 15 c.c. of chloroform. After the addition of ammonia, 25 c.c. of chloroform were used to extract the alkaloid, and 15 c.c. for washing. The fluid extract of buchu alone yielded 0·005 gm. of residue by this treatment; hence this amount was deducted from the weights found in the parallel determinations. The mixed fluids were allowed to separate in a glass vessel shaped like a Mohr's burette, the chloroform being drawn off by a pinch cock. The rubber tube proved undesirable, and a glass stop-cock would be recommended for further work. The results are below:—

No. 1.....	·075 gm.	strychnine	taken;	·070 gm.	found.
No. 2.....	·075 "	"	"	·065	"
No. 3.....	·075 "	"	"	·065	"
No. 4.....	·075 "	brucine	"	·070	"

While these results are too low, it was thought best to proceed in the same manner with an examination of commercial samples. The alkaloidal residues were dried at 100° C. for one hour. Seven samples of tincture of nux vomica were examined, 25 c.c. being taken for each assay.

No. 1	contained	0·20	per cent.	alkaloid.	
" 2	"	0·36	"	"	
" 3	"	0·31	"	"	Mean value, 0·24 per cent.
" 4	"	0·13	"	"	
" 5	"	0·25	"	"	
" 6	"	0·20	"	"	
" 7	"	0·45	"	"	

No. 7 was prepared by the writer, according to the directions of the U. S. P., and is nearly twice as strong as the mean of the other samples, while Nos. 1–6 show a variation in strength nearly in the ratio of one to three.

A sample of assayed fluid extract from Eli Lilly & Co. was found to contain 1·75 per cent. of alkaloids, as claimed on the wrapper.

Dunstan and Short recommend extraction with a mixture of only 4 parts alcohol to 1 of water, instead of 8 to 1, as in U. S. P.

BIBLIOGRAPHICAL NOTE ON NUX VOMICA.—The British Pharmacopœia having recently adopted a standard based upon alkaloidal strength, it may be a convenience to readers to refer to the following articles in the *Pharm. Jour. and Trans.*, relating to this subject. References are made to volume, page, date, author and topic. The list does not claim to be complete.

XIV	65	July 28, 1883.	*Beckurts.*	Ferrocyanide of Strychnine.
"	290	Oct. 13, "	*Dunstan & Short.*	Separation of Strychnine as Ferrocyanide.
"	292	" "	" "	Tincture of Nux Vomica.
"	380	Nov. 10, "	*Hick.*	Debate on Preparation of Tincture from Fluid Extract.
"	400	Nov. 17, "	*Tanner.*	
"	440	Dec. 1, "	*Hick.*	
"	441	Dec. 8, "	*Dunstan & Short.*	Tincture of Nux Vomica.
"	443	" "	" "	Extract " "
"	450	" "		Discussion of the above papers.
"	461	Dec. 15, "	*Conroy.*	Tincture of Nux Vomica.
"	480	" "	*Sandford.*	Tincture from Fluid Extract.
"	621	Feb. 9, 1884.	*Dunstan & Short.*	Standard Extract of Nux Vomica.
"	622	" "	" "	" Tincture " "
"	634	" "		Discussion of the above papers.
"	851	Apr. 19, "	*Schacht.*	Extract of Nux Vomica and Estimation of Alkaloids.
"	875	Apr. 26, "	*Dunstan.*	Reply to Schacht.
"	876	" "	*Smith.*	" " "
"	896	May 3, "	*Schacht.*	" " Smith.
"	1025	June 21, "	*Dunstan & Short.*	New Glucoside from Nux Vomica.
XV	1	July 5, "	" "	Chemistry and Botany of Ceylon Strychnos.
"	60	July 19, "	*Greenish.*	Seed Hair of Strychnos.
"	156	Aug. 23, "	*Dunstan & Short.*	Summary of Papers.

Physiological Action of Adonidin.—Dr. H. A. Hare gives the following conclusions derived from an experimental study of adonidin:

Adonidin in all doses increases arterial pressure by stimulating the vasomotor centres, and by increasing the cardiac force. In moderate doses it increases the pulse-rate and force from the first, but when large toxic doses are given, it primarily slows the heart by stimulating the pneumogastric, and then increases pulse-rate by depressing the inhibitory nerves, and stimulating the accelerator apparatus. The slowing of pulse-rate is also in all probability due in part to increased arterial pressure, as under these circumstances the blood-paths are greatly diminished in calibre. On the nervous system the drug has but little action, unless the quantity administered be enormous. Under these conditions it paralyzes the sensory side of the cord, but has no effect on the motor tract, or on the efferent or afferent nerve trunks.—*Therapeutic Gazette*, April 15, 1886.

PRACTICAL NOTES AND FORMULAS.

Hydrated Sulphide of Zinc, $ZnS.H_2O$ is precipitated from alkaline solutions of zinc by hydrosulphuric acid or ammonium sulphide, and forms a white powder, which oxidizes slowly on exposure to the air. Taken internally it is decomposed by the gastric juice, causing eructations of hydrogen sulphide. Pierre Vigier (*Gaz. hebdom. méd. chir.*, Feb. 5, 1886) recommends the use of this compound and suggests the following forms:

Pills.—Zinc sulphide, 1·0 gm., liquorice root and syrup of acacia, q. s.; to be made into 100 pills, of which from five to ten are to be taken daily.

Dusting Powder (*stéatite sulfuré*).—Powdered soapstone (steatite), 9 p.; zinc sulphide, 1 p. Useful as an application to excoriations.

Ointment.—Triturate zinc sulphide, 1 p., with expressed oil of almonds, 1 p., and mix with lard (or cerate) 8 parts.

Benzoate of Cocaine is considered by Dr. A. Bignon (*Nouv. Remèdes*, Feb. 15, 1886) superior to other salts of cocaine. The benzoic acid increases the stability of the alkaloid, and its antiseptic properties are of a decided advantage. A solution of the salt may be prepared extemporaneously from 1 part of benzoic acid and 3 parts of cocaine.

Antidysenteric Powder.—Washed sulphur, 1; powdered fennel, 1; sugar, 2; gum arabic, 2. The dose is a teaspoonful every three hours. Schmitjan recommends the powder as being laxative and antiseptic, and useful in subacute and chronic forms of dysentery.—*L' Union Méd.*, Jan 17, 1886.

Pulvis errhinus.—Dr. Rabow recommends in coryza two kinds of snuff powders, composed of equal weights of roasted coffee and white sugar. With 100 parts of this mixture is to be intimately mixed 2 parts of menthol, or 1 part of cocaine hydrochlorate.—*Deutsche Med. Wochenschr.*

Menthol Bougies.—Dr. Rosenberg, of Berlin, recommends the application of gelatin bougies, containing one-sixth grain of menthol, for the relief of reflex neuroses due to nasal disease.—*Weekly Med. Rev.*, April 24, 1866.

Powdered Rice as a Styptic.—According to the *Indian Medical Gazette*, powdered rice is stated to have marked hæmostatic properties. Mixed with lint, in the proportion of from 4 to 11 per cent.,

the lint thus treated being used as a compress, it is more effectual than oxide of zinc, subnitrate of bismuth, salicylic acid, or carbolic acid.—*N. Y. Med. Jour.*, Jan. 16, 1886.

Huchard's Hæmostatic Pills.—Ergotin and quinine sulphate, of each 2·0 gm.; pulverized digitalis and extract of hyoscyamus; of each 0·2 gm. Make 20 pills, of which from five to ten are given during a day.—*L'Union Méd.*

Dentition Syrup.—Dissolve cocaine hydrochlorate and borax, of each 1 part in syrup of marsh-mallow 20 p., and syrup of poppy 10 p. Use three or four times a day on the gums.—*L'Union Med.*

Apone, a remedy for rheumatism, neuralgia, etc., recommended by Dr. V. Poulet, is made by macerating for one month capsicum 200 in alcohol 1,000 and ammonia water 100, and adding to the expressed liquid chloral 10 and oil of thyme 10. For external use it may be diluted with oil. For internal use from 5 to 20 drops are taken with a little water, to be followed by a glassful of cold water or cold tea. —*Bull. Gén. Thérap.*, Feb. 13, 1886.

Administration of Hypnone.—The preparation of a syrup and of an elixir containing a medicinal dose of this new remedy, necessitates the use of a large and objectionable quantity of alcohol. Pierre Vigier recommends for this reason (*Gaz. Hebd.*, Jan. 22, 1886) the administration in the form of an emulsion, as follows:

Mixture of Hypnone.—Take of hypnone, 20 drops; expressed oil of almond, 10 gm.; gum arabic, 10 gm.; syrup of orange flowers, 60 gm.; water, 120 gm. Of this emulsion one-fourth, one-third, or even one-half is taken at a dose, representing respectively five, seven, or ten drops of hypnone. The mixture keeps well and has a pleasant taste.

Liniment of Hypnone consists of equal quantities of hypnone and expressed oil of almond. This is superior to liniments containing chloroform, which evaporates so readily, while hypnone remains in contact with the skin for a much longer time, its boiling point being 199° C.

Kefir or Milk Wine.—Kogelmann, of Graz, has shown that the imported kefir-fungus is not necessary for the production of milk wine. The same ferment is abundantly present in buttermilk and also in cream which has become strongly sour. Kogelmann gives the following directions for the preparation of kefir: One part of buttermilk is added to two parts of fresh milk. Active fermentation sets in within a few hours, and in three days there is obtained a fluid

which has the odor of wine, and which contains alcohol, carbonic acid, lactic acid, casein, etc., and which is identical with the imported kefir. The range of temperature within which the fermentation occurs is between 48° and 70° F., the best results being obtained at 59° F. The bottle used should be strong and should be but two-thirds filled. It must be at least thrice daily corked and vigorously shaken, then opened and laid for ten minutes as nearly horizontal as practicable, in order that the carbonic acid evolved shall escape, for fermentation is checked in the presence of an excess of gas. One part of the resultant kefir is sufficient to induce the appropriate fermentation in four parts of fresh milk.—*Med. News*, May 1, 1886.

Salicylated Gelatin.—Salicylic acid, 10; glycerin, 10; gelatin, 30; water 30. Dissolve by the aid of heat. It is recommended by Dr. Schwimmer in vesicular eczema.—*Wien. Med. Presse.*

Glycerite of Alum.—Dissolve with the aid of a gentle heat 1 part of alum in 5 parts of glycerin. Dr. R. W. Parker recommends this as a powerful astringent, less disagreeable than tannin, and quite compatible with iron salts. This preparation has been admitted into the new British Pharmacopœia; likewise the following:

Glycerite of Subacetate of Lead.—Take of acetate of lead, 5 oz.; oxide of lead in powder, 3½ oz.; glycerin, 1 pint (imperial); distilled water, 12 fluid ounces. Mix, boil for a quarter of an hour, filter and evaporate until the water is dissipated.

GLEANINGS IN MATERIA MEDICA.

By the Editor.

The Histology of Indian Sandal Wood has been investigated by Wm. Kirkby, F. R. M. S. The wood, which is the undoubted produce of Santalum album, is heavy and hard, but splits comparatively easy. It is reddish brown, darker at the centre than at the periphery, and is marked with darker concentric zones. With a lens, the medullary rays and wide vessels are fairly well seen. The taste is aromatic, and the agreeable odor characteristic and persistent. The wood consists of tracheides, interspersed with solitary pitted vessels, and traversed by narrow medullary rays (Fig. 1). The wood wedges vary in breadth from 25 to 294 micromm., the average being 145 micromm. The

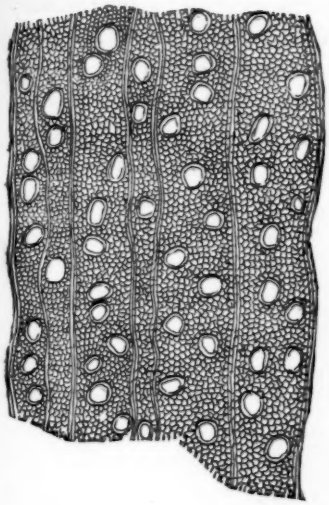

Fig. 1.—Macassar Sandal Wood:—Transverse Section of Duramen. X. 64.

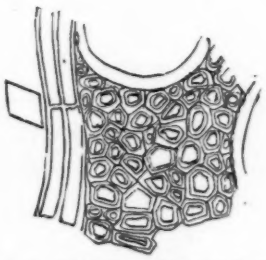

Fig. 2.—Showing Crystal and Parenchymatous Oil Cells. X. 330.

Fig. 3.—Crystal, containing Sacs, and Crystals dissolved out with Schulze's Fluid. X. 220.

vessels measure from 42 to 84, average 54 micromm. Among the tracheides are parenchymatous cells (Fig. 2), having about the same diameter as the former, and containing the volatile oil; they are isolated, but two or three are close together. Cells containing crystals of calcium oxalate are arranged in vertical rows (Fig. 3), and seen single in transverse section. The medullary rays consist of two rows of thickened pitted cells, and contain resin.

Macassar Sandal Wood is lighter than water, cuts with difficulty transversely, but cleaves easily. The heart wood is pale fawn colored or yellowish brown, with darker concentric zones, less strongly odorous than the preceding, and of an aromatic taste. Its histological structure is the same as the preceding, except that the wood wedges have an average breadth of 124 micromm., and the vessels an average diameter of 48 micromm. When sections of the wood are treated with solution of iodine, the volatile oil acquires an intense black color, such a color being not produced with Indian sandal wood oil. It is uncertain whether Macassar sandal wood is derived from Santalum album.

West Indian Sandal Wood.—The specimen examined by Mr. Kirkby was a section of a stem 57 mm. in diameter, the bark being 1 mm. thick; duramen (including pith, 1 mm.) 27 mm. in diameter; average

thickness of alburnum, 14 mm. Color of bark, grayish brown; alburnum yellow with yellowish brown zones; heart wood yellowish-brownish gray, and in the centre yellowish-grayish-brown; pith a light dot in the centre. The bark adheres closely to the wood, which is moderately hard, faintly odorous, and nearly tasteless, while the bark has an

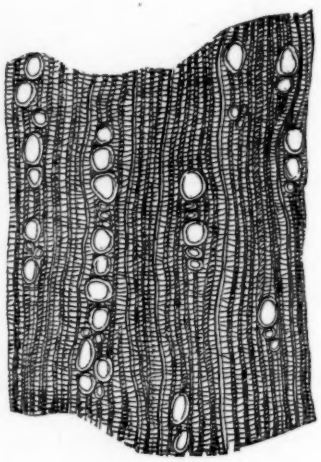

Fig. 4.—West Indian Sandal Wood. Transverse Section. X. 80.

odor resembling sandal, and a bitterish taste. The wood (Fig. 4) consists of xylem fibres, pitted vessels, and one-rowed medullary rays, the cells of which are thickened, tabular, and in the duramen, contain resin. The vessels vary greatly in size, and are usually in single radial rows of two to ten or more. Crystals of calcium oxalate are arranged in single vertical rows, and on transverse section, form usually loose concentric rings, each ring corresponding to one year's growth of the tree. The medulla cells are irregular hexagonal, thickened and pitted. No essential oil is present in the wood. Freed from cork, the bark is light red brown, and internally pale brown. Outside the narrow layer of cambium is a layer of soft bast tissue, made up of the usual elements. Next is a broad layer containing numerous bast fibres in loose layers, alternating with layers of soft bast tissue. Both these tissue systems contain numerous isolated oil cells, having a large diameter, and extended in a vertical direction. In about the middle of the outer cortical parenchyma is situated a layer of three or four tangentially extended sclerenchymatous cells, and isolated groups of stone cells are found

scattered in the parenchyma. Two or three inner rows of the cork cells have colorless cell walls, the remainder brownish red. The average thickness of the soft bast layer is 100 micromm.; mixed bast layer, 500; cortical parenchyma, 200 (including layer of stone cells, 50), and cork, 200 micromm.

The West Indian Sandal Wood is not yielded by a sandal tree, its structure being entirely different. The Macassar wood is probably produced by a different species, or at least a distinct variety of *S. album*, since the woods of other santalaceæ differ to scarcely any greater extent in structure, but exhibit no such peculiarity in the behavior of the oil towards iodine.—*Phar. Jour. and Trans.*, April 10, 1886, pp. 858–860.

Oil of Myrtus communis is now discussed in medical journals under the name of *Myrtol*, with reference to the observations made by Dr. Linarix and published in Paris, 1878, under the title of "De l'emploi du myrtol ou essense de myrte principalement dans les maladies des voies respiratoires et génito-urinaires." The oil has antiseptic and disinfecting properties, does not irritate the unabraded skin, is a digestive stimulant, and, in large doses, produces nausea and headache, at the same time a violet-like odor being observed in the breath and in the urine. It is given in gelatin capsules containing 0.15 gm. of the oil, about 6 doses being taken during the day. The oil is recommended in various forms of catarrh, and as an antiseptic in certain putrid discharges; externally, also, in rheumatism and psoriasis.

Anisic acid has been recommended as an antiseptic application for sores, and as an antipyretic remedy which resembles salicylic acid in its action and has slightly toxic effects. The acid is an oxidation product of anethol, and may be prepared from oil of anise and other volatile oils containing anethol by oxidation with nitric acid, or with potassium bichromate. Zervas recommended its preparation from 6 parts of the bichromate, 9 of water, and 7 of sulphuric acid, to which mixture 1 part of anise oil is added; after the reaction has subsided cold water is added, and the acid is purified by recrystallization.

Anisic acid has the formula $C_8H_8O_3$, crystallizes in colorless, glossy, needles or rhombic prisms, is inodorous, has a slight taste and an acid reaction, and dissolves in alcohol, ether and hot water, crystallizing from the latter solution on cooling. It melts at 175°C. and volatilizes at a higher temperature. Its alkali and ferrous salts are insoluble in water; most of the other salts are sparingly soluble and may be

obtained in crystals by double decomposition in sufficiently diluted solutions. Schultzen and Graebe ascertained, in 1867, that in the animal economy, anisic acid forms *anisuric acid*, $C_{10}H_{11}NO_4$, which is a substitution product of glycocoll.

Ammi Visnaga, Lin. is an annual or biennial umbelliferous plant, indigenous to the countries near the Mediterranean. The plant, and, more particularly, the fruit, has long been in use, diuretic and emmenagogue properties being ascribed to it. The numerous rays of the umbels finally become quite hard, and possessing an aromatic flavor, are used in oriental countries as tooth picks. The Arabian name of the plant is *el kellah*. Ibrahim Mustapha (*Compt. rend.*, Aug. 25, 1879), isolated from the fruit an emetic and narcotic principle, which he named *kellin;* it is obtained by mixing the powdered fruit with slaked lime and alcohol, evaporating to dryness and exhausting with ether. Kellin forms white, silky needles, which are sparingly soluble in cold water. Recently attention has again been directed to this plant in French journals (*L'Union Méd.*, April 8, 1886). Kellin is stated to produce in animals paralysis of the hind legs, irregularity of heart action and slow breathing. An infusion of the fruit, 5 or 6 : 100, is used as a mouth-wash in inflammations and carious teeth, and a decoction, 10 : 1000, is given internally for rheumatism, from 125 to 150 gm. being taken daily; an ointment made with the powdered fruit being used externally. The decoction is also stated to possess mild antipyretic properties, and to be useful in calculi of uric acid. The leaves, which are used for poultices, are decompound, the final lobes being linear, cuspidate and divaricate.

Ailanthus leaves poisonous.—Caraven-Cachin has observed that ducks fed with ailanthus leaves, died in a few hours, and attributes this effect to a poisonous principle residing in the very acrid juice. —*Jour. Phar. Chim.*, Dec., 1885.

Ambrosia artemisiæfolia, Lin.—Attention has been directed to this common plant, known as ragweed, in the *North Car. Med. Jour.*, by Dr. J. H. Hill, who found it very serviceable in persistent bleeding of the nose, a strong infusion of the plant being given in tablespoonful doses every half-hour, and a plug made of the leaves being inserted into the nostril. According to the National Dispensatory, the astringency of the plant has caused it to be used in moderate discharges of blood and mucus, and to palliate mercurial salivation.

Galium Aparine, Lin., nat. ord. Rubiaceæ, commonly known as

cleavers and *goosegrass*, is a common weed found in hedges and thickets in North America, Europe and Asia. Its weak quadrangular stem is retrorsely prickly, about 2 to 4 feet long, and reclines upon other plants; the linear-lanceolate leaves are in whorls of eight, tapering at the base, and rough on the margin and mid-ribs; the small, white flowers are produced from May to September, and ripen a subglobular twin fruit, which is covered with hooked prickles. The plant was formerly employed as a diuretic, in dropsy and in pectoral complaints. Recently Dr. T. R. Orwin (*Brit. Med. Jour.*), reported its successful employment in a case of psoriasis, which had not yielded to chrysarobin, tar or arsenic. The plant was applied in the form of poultice and was internally given in infusion.

Danais fragrans, *Commerson*, nat. ord. Rubiaceae, is a climbing shrub of Réunion, Madagascar and other islands, with small, red, fragrant flowers. A decoction of the root has been used in herpetic affections, and as a tonic and febrifuge; and the bright orange-colored juice, which the fresh root exudes, has been used as a dye, and medicinally, as an application to wounds, causing rapid cicatrization. Bourdon has isolated from the root an alkaloid called *danaïdine;* but the medicinally active principle is *danaïne*, as reported by Heckel and Schlagdenhauffen to the Académie française.

Mercurialis perennis, *Lin.*, nat. ord. Euphorbiaceæ, was formerly employed in medicine, like the less active Merc. annua, *Lin.* In 1863 E. Reichardt isolated from both plants the volatile alkaloid *mercurialine*, which, in 1877, was ascertained by E. Schmidt to be identical with monomethylamine; besides which, also, ammonium salts and trifling quantities of trimethylamine are present. The alkaloid in the form of hydrochlorate, and administered by hypodermic injection, was recently found by Dr. Hugo Schulz (Arch. f. experim. Pathol. u. Pharmak., 1886, p. 88), to produce no decided effect; but the herb, as well as the fluid extract, given to pigs and rabbits caused paralysis of the muscles of the bladder with diuresis and diarrhœa. The plant is known to contain a chromogene yielding a blue coloring matter resembling indigo. Whether the physiological action of the plant is due to this principle, as Dr. Schulz believes, or to some other compound, has not been established.

Polygonum aviculare, *Lin.*, popularly known as *knotgrass* or *goosegrass*, is a common annual weed, growing in cultivated and uncultivated grounds in most countries. The thin stem is prostrate

or sometimes erect, much branched, the branches ascending, the leaves small and varying in shape, and the akenes triangular, blackish, dull, granular and enclosed in the small sessile calyx. The herb is inodorous and has a slight astringent taste. It was recommended by Dioscorides and Plinius as a remedy in fevers, and was subsequently employed in diarrhœas, hemorrhages and as a vulnerary. Recently it has been recommended by Dr. Roschtschinin, of St. Petersburg, in bronchial catarrh, asthma and whooping cough, an infusion 30 : 1000 being given in doses of a glassful three times a day. Werner is said to have observed considerable quantities of an alkaloid in the plant. A. Buchner, in 1844, found the plant to be free from tannin, and the infusion made with diluted acetic acid, to give a white flocculent precipitate with tannin, which was attributed to the presence of albumen; the same infusion neutralized with ammonia acquired a bright yellow color.

Prof. Falconi, of Cagliari, has successfully used the same plant in the initial stage of cholera, giving a decoction prepared from 100 gm. of the herb with 400 gm. of water.

Phormium tenax, Forster, nat. ord. Liliaceæ, yields the so-called New-Zealand hemp, and is also regarded as a good substitute for sarsaparilla. Dr. F. A. Monckton, in the *Lancet,* reports it to be very useful for producing healthy granulations in cases of severe larcerations and amputation. A strong decoction is used, made by boiling the roots and the butts of the leaves for twelve hours, and to prevent fermentation, which readily sets in, half an ounce each of carbolic acid and of glycerin is added to a quart of the decoction.

Snake-poison.—Dr. R. Norris Wolfenden read a paper before the Royal Society, December 17, 1885, in which he demonstrated that the venom of the East Indian cobra (Naja tripudians, *Merr.*) does not contain any alkaloid or poisonous acid, but that its poisonous properties reside in the albuminous constituents, and that, with the removal of the latter or their destruction by means of potassium permanganate, the poisonous properties disappear. The venom contains three varieties of albumins. Two of them, globulin, which is in largest quantity, and syntonin, act upon the respiratory centre; while the third, serum-albumin, which exists only in very small quantities, probably produces paralysis of the motor centres. Whether the poisonous properties of these albumins are due to some peculiarity of their constitution, or whether some hypothetical poison is linked with albumins of ordinary

constitution, has not been ascertained; but the possibility of the proteids of the venom being themselves poisonous, is rendered more probable by the observations of Schmidt-Mühlheim and Albertoni, who have shown that ordinary peptone, injected into the blood, may produce poisonous effects, causing a remarkable fall in blood-pressure, and destroying the coagulating power of the blood.—*British Medical Journal*, Jan. 9, 1886.

NOTE ON A NEW VARIETY OF RHATANY.[1]

By E. M. Holmes, F. L. S.,

Curator of the Museum of the Pharmaceutical Society.

The three varieties of rhatany which have hitherto appeared in the London market have been respectively described under the names of Peruvian, or Payta rhatany; Savanilla, or New Granada rhatany; and Pará, or Ceará rhatany. These have been referred to the following species: *Krameria triandra*, Ruiz and Pavon; *K. tomentosa*, St. Hil.; and *Krameria argentea*, Mart. The other species of *Krameria* which furnish a rhatany, but the roots of which have not as yet been offered in commerce in this country, are *Krameria lanceolata*, Torr., a native of North America; *K. secundiflora*, DC., of Texas, Mexico, and Arkansas; *K. spartioides*, of New Granada; *Krameria acida*, Bg., of Venezuela; and *Krameria cistoidea*, of Chili.

The rhatany at present under consideration does not come from any of the above-mentioned countries, having been imported from Guayaquil, in Ecuador, a country to which the Peruvian rhatany might possibly be supposed to extend on the one side, and the New Granadian species on the other.

The latter kind I have not seen, but the Guayaquil rhatany differs considerably from the Peruvian root, and possesses the following characters: It is a large woody root, from 1 to 2 inches, or more, in diameter in the larger specimens, and about ½ inch in the smaller roots. All the pieces I have seen are strongly contorted. The bark is of a reddish-brown color, with blackish streaks, is thin in comparison to the meditullium, is of a fibrous texture, and is somewhat striated on the surface and dotted over with small warts. It has a very astringent taste, but no marked odor.

[1] Read at an Evening Meeting of the Pharmaceutical Society, Wednesday, April 14th, 1886.

I do not think it probable that this root is derived from the species used in New Granada, viz., *Krameria spartioides*, since all the known species of *Krameria*, so far as I have been able to ascertain, are either herbaceous plants or under-shrubs, whilst the root under consideration resembles more nearly that of a large shrub or small tree.

From a preliminary examination of the microscopic structure of the root, I have reason to believe that the plant yielding it, although probably not a *Krameria*, may belong to a genus nearly allied. A more careful and detailed examination of the microscopic structure may perhaps throw more light upon this point. Meanwhile the introduction of the drug into the London market, under the name of rhatany, renders a chemical examination of its properties desirable. The taste of the root being remarkably astringent, it occurred to me that some indication of its value as an astringent might be obtained by a comparison with the other commercial species of rhatany in respect to the amounts of tannin afforded by them. Dr. B. H. Paul kindly undertook to make the comparison, and has communicated to me the following results, obtained in his laboratory by Mr. F. W. Passmore: Taking a quantity of the bark only, of the root of the Guayaquil rhatany, sufficient to yield 100 parts of tannin, a similar quantity of the root, including both bark and wood, of Peruvian rhatany, yielded only 37·6 parts of tannin; Guayaquil rhatany, 41·3 parts; Pará rhatany, 45·7 parts; Savanilla rhatany, 49·3 parts. The proportion of tannin contained in the bark alone of the Guayaquil rhatany is therefore relatively more than twice as much as that contained in Savanilla rhatany root. Although the amount of tannin is apparently greater both in the Savanilla and Pará rhatany than in the Guayaquil variety, it must be borne in mind that the proportion of the wood to the bark is much greater in the latter, being 62 per cent. of wood to 38 per cent. of bark in the specimen of Guayaquil rhatany examined by Dr. Paul.

It is thus evident that the Guayaquil rhatany contains a larger quantity of tannin than the Peruvian drug, but less than either the Savanilla or Pará varieties, the separated bark of the Guayaquil root being, however, more than twice as rich in tannin as either of those roots.

It may here be worth while to mention the fact that the Savanilla rhatany root which is at present in the London market is identical with that described in "Pharmacographia" as Pará rhatany, this fact

having probably led to the erroneous description of Savanilla rhatany in the Pharmacopœia, where it is stated to be of a dark purplish or violet color, whereas Savanilla rhatany has a pale or dull purplish-brown tint. The latter is the kind referred to in Dr. Paul's analysis.

The Guayaquil rhatany, therefore, evidently possesses powerfully astringent properties, and might be made available for tooth tinctures, and might possibly be turned to account in tanning.

I may take this opportunity of acknowledging my indebtedness to Messrs. Jenkin and Phillips, who have kindly presented specimens of the root to the Museum of this Society, together with a sufficient quantity for the chemical examination made by Dr. Paul. Mr. Philips informs me that this kind of rhatany appeared in the London market for the first time this month, and that only four bales of it were offered. —*Phar. Jour. and Trans.*, April 17, p. 878.

EUCALYPTUS PRODUCTS.

(Concluded from page 183.)

Eucalyptus Kino.—An astringent exudation occurs in most species of eucalyptus, filling cavities or cracks in the wood and barks; when dry it is brittle and presents an appearance similar to Indian kino. It varies greatly in different species, both in quantity and in character. According to Wiesner it consists of a mixture of tannic acid, giving a dirty green precipitate with solutions of ferric salts, pyrocatechin, a little catechin, and a very variable quantity of a substance insoluble in water, but soluble in alcohol, and which has been variously described as gum resin, kino-red, or eucalyptus-red.

The amount of the astringent exudation afforded by different species may be seen from the following table :

	Per cent.	Per cent.
E. leucoxylon	21·94	
E. macrorhyncha	11·12 to	13·41
E. longifolia	8·3	
E. rostrata	8·22	
E. viminalis	4·88 to	5·97
E. globulus	4·84 to	5·97
E. resinifera	4·38	
E. goniocalyx	4·12 to	4·62
E. melliodora	4·03	
E. obliqua	2·50 to	4·19
E. polyanthema	3·97	
E. Gunnii	3·44	
E. amygdalina	3·22 to	3·40

The relative quantity of kino-red present in the tree appears to determine in great measure the value of its timber, as it renders the wood almost impervious to decay when under water, and prevents the attacks of insects and marine animals. The species in which it is most largely present contain from 17 to 19 per cent., as in *E. marginata, E. rostrata* and *E. robusta,* which are the most valuable of the timber trees of Australia for shipbuilding, piles and similar purposes. The kino of *E. resinifera* also contains a quantity of kino-red, only one-sixth of it being soluble in water. It is to this last-named species that Botany Bay kino has generally been attributed; but Sir F. von Mueller states on the authority of the Rev. Dr. Woolls that it is much more extensively collected from *E. siderophloia,* to which, indeed, the name of *E. resinifera* has been applied by Allan Cunningham.

Several species yield a kino containing but little kino-red, and consequently dissolving readily in hot water, although forming a turbid solution when cold.

Those of the following species have been examined by Wiesner:[1] *E. globulus, E. leucoxylon, E. citriodora, E. amygdalina, E. pilularis* and *E. fissilis.*

There is great difficulty in ascertaining the exact botanical source of the eucalyptus kinos at present imported into this country, partly owing to the same name being applied to distinct trees in different parts of Australia. Thus the name of red gum, under which name a eucalyptus kino is employed in this country, is applied to *E. rostrata, E. tereticornis,* and in West Australia to *E. calophylla.* The first two of these yield a kino only partially soluble in water, while that of *E. calophylla* is easily soluble, and contains but little kino-red. This species is said by Mueller to afford a liquid kino in considerable quantity by tapping the trunk. It is caught in casks as a material for tanning and dyeing purposes, and is said to fetch £20 to £25 per ton in the London market. It indurates on exposure to the air, and can then be used in medicine internally, like true kino, or in powder, as an application to wounds. Two species which yield a kino perfectly soluble in water are *E. obliqua* and *E. piperita.* That of the former resembles Indian kino in appearance, and forms a deep-red neutral solution; the latter is of a zircon-red color, is

[1] See *Pharm. Journal* [3], ii, p. 102.

translucent, and forms a yellowish-red, neutral solution. The tannic acid of *E. obliqua* differs from that of most other species in giving a dark violet precipitate with solutions of ferric salts. The number of these inspissated juices suitable for replacing true kino in pharmacy is therefore very limited. A great deal of other interesting matter is contained in "Eucalyptographia," under different species, such as the use of the acid sap of *E. Gunnii* to form a kind of cider, the employment of the roots of *E. microtheca, E. oleosa,* and *E. populifolia* as a source of drinking water in the desert land where they flourish, the manna of *E. viminalis,* and the value of the rugged barked variety of *E. leucoxylon* as an indication of gold-bearing soil. Much of interest for the botanist will be found in the details concerning the development of the seedling plants and the structure of fruit, leaf, flower, wood and bark; but these have no practical bearings for pure pharmacy.—*Phar. Jour. and Trans.*, April 24, 1886.

SHELLAC.

By J. Bosisto,
Examiner in Materia Medica at the College of Pharmacy, Melbourne.

In the central province of India, especially in the thick jungles, the coccus lacca insect may be seen dwelling together in thick set groups on the branches and twigs of Zizyphus jujuba, Ficus religiosa, Butea frondosa, besides other trees and shrubs belonging chiefly to the leguminosæ order. Each insect incrusts itself over with a resinous substance, forming within a cell containing larvæ and a deep coloring matter, the dead body of the parent being itself the cell. Hundreds of these are piled together adhering to a twig, and in this condition it is termed stick-lac, and contains about 70 per cent. of resin, 10 per cent. of coloring matter, and the rest *debris.*

The collecting of stick-lac and the making of shellac, button-lac, sheet-lac and lac dye, is an industry carried on by the Hindoos in the districts of the central provinces. In order to obtain the largest quantity both of resin and coloring matter, the stick-lac is collected before the larvæ emerge from the cells, else, with their flight, they carry away the greater part of the dye coloring.

Since the advent of the aniline dyes, lac dye is but little in demand. The larva is allowed to mature, as it does not interfere with the quality or quantity of the resin portion. It is chiefly this circumstance that

keeps down the price of shellac, there being, consequently, more insect workers than formerly.

The process of dealing with stick-lac for the making of shellac and lac dye was witnessed by the writer when in India, and is as follows :—The first part of the process is to separate the lac from the twigs. This is done by two women—one turning and the other feeding a primitive-shaped wooden mill. When a heap is formed (about a bushel in quantity), it is winnowed in a rustic-looking winnower, the lighter *debris* separating; the remainder is then hand-picked. The process of grinding and winnowing is repeated until the whole is reduced to small, orange-colored nodules. When in this condition it is termed seed-lac; the bright garnet-colored pieces, being few in number, are now picked out and set aside for native ornaments. The seed-lac is then placed into a large earthenware pan, and with it some water. A woman steps into the pan, steadying herself against the mud wall with her hands, then turning violently to the right and left, in order to keep the lac in a continual state of motion against her feet and the sides of the pan for some time, the other woman occasionally adding more water, until the vessel is full of a dark-colored liquid. After settlement, the dye water is removed into another earthenware pan, and the lac again washed until the water runs away clear.

Lac Dye.—The treatment of the colored water for the purpose of obtaining from it the lac dye is very simple. After straining, lime water is added which precipitates the dye. The water is then drawn off, and the dye drained through cotton cloth; from this it is transferred to compressible frames, containing strong iron plates, and reduced by a native screw press to solid sheets of dark purple dye, about a quarter of an inch thick; these are cut up into cakes and stored until dry enough for packing, and then forwarded to Calcutta for sale in the bazaars. The utilitarian value of lac dye over cochineal in a humid climate, especially in dyeing the scarlet cloth of the soldiers' coats, lies in its power to resist the action of human perspiration.

Shellac.—The manufacture of shellac is an entirely distinct process. The seed-lac at the bottom of the pan is removed, dried and sifted. The finer dust, which is highly inflammable, is removed. The lac workers of India make it up into bracelets and ornaments of various kinds.

The coarse lac which is to be made into shell is put into long sausage-shaped bags of about two inches diameter, made of cloth like American

drill. Under a shed is a charcoal fire about two feet long and six inches wide; alongside of the fireplace is a bamboo pole about three feet long and four inches in diameter, filled with warm sand, inclining at a slight angle to the ground. On each side of the fireplace is sitting a man, but more generally a woman, each holding an end of the sausage-roll-looking bag about twelve inches high over the clear charcoal fire, turning the roll or bag briskly until the lac begins to ooze through the interstices of the cloth; the bag is still kept twisted until a coating of soft lac covers the outside. It is then removed from the fire, and a small disc of lac is placed here and there over the surface of the bamboo by a rapid turn of the wrist. A third woman is sitting at one end of the bamboo, holding in both hands a strip of aloe leaf, resembling very much a thin magic wand; this she pushes forward over the soft lac, repeating the motion three or four times, when a thin film of the lac covers over the round surface of the bamboo, which is immediately transferred into an open basket; the lac, drying rapidly, cracks up into many pieces—this is shellac.

Button-lac is simply shellac without spreading.

Sheet-lac is made in a similar manner to shellac, only the sheets are much thicker, and the woman removing it from the bamboo in a supple condition, and with both hands, stretches it over the fire, in order to remove the wave-like furrows which are impressed on it by the fibrous surface of the aloe leaf. While doing this it is not uncommon to see the woman—who performs her work intelligently—lift the hot sheet to her mouth and bite out any foreign substance, such as dirt or sand, filling in the hole so made by a rapid movement of her hand over the sheet. The average rate of wages is an anna and a quarter ($1\frac{1}{8}$ of a penny) per day.—*Australas. Jour. Phar.*, 1886, p. 49.

COCAINE BENZOATE.

By B. H. Paul, Ph.D.

In *The Month*, for February, reference was made to an article by M. Bignon on cocaine benzoate, in which the salt was recommended as being likely, in the author's opinion, to possess more pronounced anæsthetic properties than any other salt of cocaine. It was considered that the compound of cocaine with benzoic acid would be more stable than the hydrochlorate, and in a trial of the benzoate it was found to produce the anæsthetic effect without the painful sensation

that accompanies the use of the hydrochlorate. Since the appearance of the article referred to in *Nouveaux Remèdes*, there has been some demand for cocaine benzoate, but it appears that the principal makers of cocaine have declined to supply the salt, and it became necessary for those who required it to undertake the preparation of it themselves. According to the account given by M. Bignon, the benzoate is easily obtainable by mixing cocaine with benzoic acid to neutralization, the proportions being 122 to 303, or about one part of benzoic acid to three parts of cocaine. M. Bignon does not, however, give any description of the characters of the benzoate as a definite compound, but merely the mode of preparing a solution containing 5 per cent. of it. On a former occasion I had attempted to prepare this salt, but did not succeed in obtaining it in a crystalline condition, the solution obtained by neutralizing cocaine with benzoic acid drying upon evaporation to a thick gummy residue.[1]

An article has, however, been supplied lately by a French manufacturer, under the designation of cocaine benzoate, which is in the form of a light crystalline powder, not very readily soluble in cold water, but dissolving at once, on the application of a gentle heat, in about thirty parts of water, and on evaporation of this solution yielding a mass of delicate acicular crystals. Not having been able myself to obtain any product of this character by the combination of cocaine with benzoic acid, I undertook the examination of the substance in question, which was supplied to me by Mr. Martindale, who had also been endeavoring to prepare cocaine benzoate in a condition suitable for medical use. I found, however, that the solution of the substance obtained from Paris, under the name of cocaine benzoate, did not give any precipitate on the addition of ammonia or caustic potash, neither did it present any indication of containing benzoic acid on the addition of hydrochloric acid. Judging from these two tests, therefore, it did not appear to contain either cocaine or benzoic acid; at any rate enough to be separable in that way from a solution containing one part of the substance in thirty of water. Another reason for doubting that this substance was a cocaine salt was the observation that its anæsthetic property is at most very slight. This point has been ascertained by Dr. Tweedy by the application of a solution (one part in thirty) to the eye.

I therefore prepared some cocaine benzoate by saturating the base with benzoic acid for the purpose of comparison. I found that on

[1] See *Pharm. Journal*, October 17, 1885, p. 326.

mixing the two substances in suitable proportions with only a drop or two of water they readily combined, forming a thick liquid which dried up on exposure to a surface of oil of vitrol to a gummy mass, and after some days' exposure in a cold place it presented a crystalline structure. Several products which Mr. Martindale had sent to me had the same characters, and on redissolving these in about their own weight of moderately warm water, solutions were obtained which gave on cooling and after standing some time, acicular crystals quite different, however, from those obtained from a solution of the "cocaine benzoate" procured from Paris. A solution of these crystals gave with ammonia and hydrochloric acid the precipitates characteristic of cocaine and benzoic acid salts, in both respects, therefore, differing from the French article.

It was clear therefore that cocaine benzoate could be obtained in a definite crystalline condition, though a very soluble salt, and it was also clear that the article obtained from Paris, under that name, was of a different nature. A further examination of this latter substance enabled me to ascertain that it was in reality the same substance that I have previously described[1] as being produced by the action of water and heat upon cocaine—benzoyl ecgonine—and it became a question how this substance could have been taken for cocaine benzoate. In seeking for a solution of this problem I tried the effect of rapidly evaporating an aqueous solution of cocaine benzoate thinking that the benzoic acid might thus be driven off and the decomposition of the cocaine by heat and water brought about at the same time. But this was not the case, and I was equally unsuccessful when a solution of cocaine benzoate in spirit was rapidly evaporated. In both cases the residue left was cocaine benzoate, which after some time showed signs of becoming crystalline. Considering the source from which this article had been obtained there seemed to be every reason to suppose that it had been produced as the result of some unobserved alteration that had taken place in the attempt to prepare a true cocaine benzoate, and it remains to be determined how this change took place. For this purpose I have some experiments still in progress, and have received some information bearing on the point from the manufacturer of the article supplied from Paris.

I may take this opportunity of supplementing the account I formerly gave of the benzoyl ecgonine obtained by heating cocaine with

[1] *Ibid.*, p. 325.

water. It may be easily produced by heating cocaine with about twenty parts of water in a closed tube. At first the cocaine melts when the temperature is about 90° C., but it gradually dissolves on maintaining the heat at 100° C., while bubbles of gas or vapour escape from the mass. The change is facilitated by occasionally shaking the tube so as to distribute the melted cocaine through the water in globules and thus extend the surface of contact. After about twelve hours a perfectly clear solution is obtained, and on testing this with litmus paper it has only a very faint acid reaction if the cocaine used has been purified by recrystallization from alcohol. With impure cocaine, on the contrary, the acid reaction of the liquid is often very decided. By evaporating the liquid to a small bulk the benzoyl ecgonine crystallizes in needles, closely resembling ammonium oxalate. These crystals when dried by exposure to the air retain some combined water, and they melt when heated; but when dried over oil of vitrol they become opaque and then no longer melt when heated in the water-bath. In my former paper it was stated that I could not then succeed in obtaining benzoic acid from this substance by heating it with concentrated hydrochloric acid, and this was due to the very small quantity of material I had to deal with, less than half a gram. I now find that it does yield benzoic acid when heated with strong hydrochloric acid, as well as by the action of caustic soda.

It will be interesting to observe the difference in the physiological action of this substance as compared with cocaine. So far as the trials already made determine this point, benzoyl ecgonine does not appear to have much, if any, anæsthetic effect when applied to the eye, or to produce any appreciable result beyond a little, but decided, dilatation of the pupil. Chemically this substance differs from cocaine only by CH_2, or in other words, it is cocaine in which a methyl group (CH_3) has been replaced by hydrogen.—*Phar. Jour. and Trans.*, March 27, 1886, p. 817.

SACCHARIN.

Under the name of saccharin, a substance has recently attracted notice, both in Europe and in America, that seems destined to play no small rôle commercially, and it may be also therapeutically.[1]

[1] Fahlberg. "Saccharine."—*American Chemical Journal*, Vol. I., p. 170., Vol. II., p. 181, and Fahlberg and Remsen, Vol. I., p. 426.

V. Aducco e U. Mosso. "Esperienze fisiologiche intorno all'azione della sulfinide benzoica o saccarina di Fahlberg."—*Archivio p. l. Scienze Mediche*, Vol. IX., p. 407, 1886.

It is to be regretted that this special name should have been given when the substance is not a carbohydrate but a nitrogenous body, having no affinities to the sugars proper save in the peculiar quality of sweetness, and when again the term saccharin has already been employed by Peligot[2] to designate a dextrogyrous sugar obtained by the prolonged heating of a solution of glucose with lime. The saccharin prepared by Fahlberg of New York is made from toluene, a derivative of coal tar, and has the formula $C_6H_4 \begin{matrix} CO \\ SO_2 \end{matrix} > NH$ being anhydro-ortho-sulphamin-benzoic acid, or benzoyl-sulphonic-imide. It is a white crystalline substance, difficultly soluble in cold water, more easily in hot, crystallizing out on cooling in short, thick prisms, apparently monoclinic. According to Aducco and Mosso, the aqueous solution is strongly acid. Saccharin melts at 200°C., partially decomposing and giving off the smell of bitter almonds.

Even when the amount present is so small as one part in 70,000 of water, the neutralized solution has a distinct sweet taste—as sweet, that is, as that of one part of cane or beetroot sugar in 250 parts of water; so, therefore, saccharin would seem to possess 280 times the sweetness of ordinary sugar. Alcohol, ether, and glucose are good solvents, and it is precipitated out of the neutralized solution by hydrochloric acid. Its salts also possess a strongly saccharine taste.

Aducco and Mosso, studying the physiological action of this body, found that frogs could be kept for days, and with impunity, in a neutralized watery solution. Dogs also exhibited no ill effects when saccharin was given in increasingly large quantities up to 5 grams daily for several days. The body-weight continued unaltered. The saccharin was discovered unchanged in the urine; it seems to undergo no change in the body. It does not influence the quantity or specific gravity of the urine, nor does it cause any change in the urea and sulphuric acid excreted; the chlorides are slightly increased. The presence of saccharin in the urine delays decomposition.

Stutzer, as well as Aducco and Mosso, obtained similar results in the human subject, 5 grm. daily having no ill effect, passing away by the kidneys and appearing neither in the saliva, nor in the milk, nor in the fæces; the appetite remained unaffected. Now 5 grm. of saccharin, it must be noted, are equal in sweetening power to more than two and half pounds of sugar.

[2] Peligot, *Comptes Rendus*, T. 89, p. 918; T. 90. p. 1141, 1879.

From this it will be seen that Fahlberg's saccharin may become, in certain cases, a useful substitute for sugar. In diabetes, Dreschfeld[3] has determined no alteration either in the quantity of urine or in the amount of sugar passed. According to Levinstein,[4] diabetic patients in Berlin have been treated with it for several months, without experiencing any ill effects. Its use is further indicated in obesity. Saccharin has scarcely any retarding effect on the digestion of either proteids or hydrocarbons, and in two cases of acid dyspepsia Dreschfeld found that it relieved some of the troublesome symptoms. Stutzer has noticed that when added in small quantities it increases the diastatic action of malt in presence of sugar.

As an indication of other possible uses it may be remarked that Levinstein,[4] at a meeting of the Society of Chemical Industry, in Manchester, exhibited a specimen of quinine, in which the bitter taste had been masked by the addition of a small quantity of saccharin.

J. G. ADAMI.

—*Med. Chronicle*, April, 1886.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, May 18, 1886.

The last of the present series of Pharmaceutical meetings was held this afternoon; Mr. Wm. B. Webb in the chair.

Mr. Bowen, of Melbourne, President of the Australasian Pharmaceutical Association, being present, was introduced to the meeting and expressed his pleasure at seeing the facilities which the college had provided for the education of students of pharmacy, and thought the influence of the pharmaceutical meetings must be productive of good to the members of the profession.

Donations to the library were made as follows: Jahresbericht für Agricultur-Chemie; Proceedings of the American Pharmaceutical Association for 1885, and Report of the Smithsonian Institution.

The prescription, which was submitted at the last meeting, was the first subject for discussion, and, as agreed upon, Mr. Procter instituted experiments upon the subject just after the last meeting, using the proportion of 5 grains of potassium carbonate to ℥ss of fluid extract of buchu, made strictly according to the formula of the United States Pharmacopœia. This preparation showed no signs of decomposition or of any of the gummy or soapy deposit which took place in that which had been exhibited at the last meeting. The sample was kept in

[3] Dreschfeld, *British Medical Journal*, 1886, p. 409.

[4] Levinstein, *Journal of the Society of Chemical Industry*, Feb. 27th 1876, p. 75.

the store about three weeks, and another sample, made but a short time since, was of the same appearance as that which had been made for some time; this, it was thought, proved that the reaction, described at the last meeting, was caused by the fluid extract employed being made in a different manner from that directed by our pharmacopœia.

A note on *fluid extract of corn silk*, the stigmata of Zea Mays, written by Spencer Phillips, of Topeka, Kansas, was read, and the sample of the fluid extract submitted with it, had an odor very like either that of ergot or colchicum. The formula is as follows:

Dried Corn Silk	16 oz.
Diluted Alcohol	q. s.
Diluted Hydrochloric Acid	*f* ℥j.
Glycerin	q. s.

Grind the corn silk in a mill as fine as possible. Having moistened the ground drug sufficiently, pack firmly in a glass percolator, then add enough menstruum to saturate and leave a stratum above it. When the liquid begins to drop from the percolator, close the lower orifice, and, having covered the percolator, let it macerate *four days*. Then allow the percolation to proceed until the drug is exhausted. Having reserved the first thirteen fluid ounces, evaporate the remainder, having first added the diluted hydrochloric acid to this portion, by aid of a water bath, to the consistence of a soft extract. Dissolve this soft extract in glycerin and add sufficient glycerin to make the measure of one pint when added to the reserved liquid. By using a still, the cost of the fluid extract is reduced to less price than it can be obtained by purchase.

The reading of this note elicited a conversation upon the value of corn silk as a therapeutic remedy; some of those present doubted whether it had any value at all, while another member stated that a medical friend found it valuable as a remedy in diseases of the kidneys; and there is good authority for believing it to be active as a diuretic. A difference in the color of the sample exhibited, and that of other makers which was upon the market, was explained by the statement that some was made from the fresh pale green corn silk, and that others were prepared from the dried drug, like the sample shown.

A member asked what was the usual practice in reference to *lard* for pharmaceutical uses, and what was found best in practice. One of those present stated that he had lard made in the country specially for him and found it entirely satisfactory. The inquiry was made whether the refined lard of commerce was pure enough for medicinal purposes; this was answered that one of the houses who refined very large quantities of lard stated that they made none at all, but merely refined it. It was queried, What percentage of water was present in commercial lard? but no one present stated that they knew what amount of water it did contain. The preservation of lard by means of benzoin and poplar buds was also discussed, and some thought that benzoic acid would answer as well as benzoin, while another present expressed the opinion that the resinous matter of the gum benzoin was the efficient agent.

The subject of *concentrated nitrous ether* being used to add to alcohol in proportions alleged to make sweet spirit of nitre, was brought up for discussion,

and the opinion was expressed that it would allow of too great variation in the preparation. As the true ether boils at a temperature of 64·4, it is clear that any solution of it that can be transported in ordinary commercial transactions, when added to nineteen parts of alcohol, cannot result in a 5 per cent. solution of the true ethyl nitrite.

A member asked which was the proper way to dispense *oily* or *oleoresinous liquids*, when prescribed with aqueous menstrua? whether they should be emulsionized with some substance that would render the mixture homogeneous? This process was thought to be the best course.

The following prescription was read: acid. benzoic., ℥ij; liq. ammonii acetatis, ℥iij; elix. simp., ℥j. Thus written the formula cannot be dispensed, if the exact letter of the prescription is followed. By the addition of a small amount of liq. ammoniæ the trouble ceases.

A *poison guard* was described by the actuary; it is the invention of Mr. R. C. Hartranft, of this city, for which a caveat has been filed. The cork has a disk of tin with a serrated edge cemented to it, and it is claimed that any one, on attempting to open a bottle with this device attached to it, will be certain to notice the fact. This, and every other mechanical contrivance, has this disadvantage, that those who expect poisons to be thus guarded, will think that those vials not so guarded may be used without danger.

There being no other business, on motion the meeting adjourned.

THOS. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Chicago College of Pharmacy.—The chair of pharmacy, made vacant by the resignation of Prof. Oldberg, will, during the coming session, be occupied by Prof. N. Gray Bartlett, who was formerly connected with the same college as a teacher, and brings to his new position his long experience as a lecturer and as a pharmacist.

Illinois College of Pharmacy.—The lecture room and the laboratories will be located at the corner of Lake and Dearborn streets, in Chicago. The faculty consists of Oscar Oldberg, Phar.D., Professor of Pharmacy and Director of the Pharmaceutical Laboratory; John H. Long, Sc.D., Professor of Chemistry and Director of the Chemical Laboratory; W. Kerr Higley, Ph.G., Professor of Materia Medica and Director of the Microscopical Laboratory; and John Conrad, Ph.G., Assistant to the Chair of Pharmacy and Director of the Dispensing Department.

Alumni Association, Louisville College of Pharmacy.—At the annual meeting, held April 7th, O. A. Beckman was elected President; B. Buckle and P. Heuser, Vice-Presidents; P. Fisher, Treasurer; O. C. Dilly, Recording Secretary; and O. Hausgen, Corresponding Secretary. In addition to the officers the Executive Board consists of O. E. Muller, A. Schackner, E. Goebel, W. Tafel, and A. Schoettlin. Various committees were appointed, and the usual routine business was transacted.

Alumni Association, St. Louis College of Pharmacy.—The eleventh annual

meeting was held February 16th, when the following officers were elected for the ensuing year: President, W. C. Bolm; Vice-Presidents, Chas. Ludeking, and R. H. Smiley; Recording Secretary, H. M. Whelpley; Corresponding Secretary, F. F. Witting; Treasurer, Chas. Gietner; Registrar, Dr. O. E. Treutler; and O. F. Heitmeyer and Louis Schurck, members of the Executive Board. A proposition, made by the president, that a course of lectures be given during the winter months, under the auspices of the Association, was referred to a committee for further consideration.

Arkansas Pharmaceutical Association.—The third annual meeting convened in Little Rock, April 29th. The president, John B. Bond, in the chair. The treasurer reported a balance on hand amounting to $151.20. The New York and Brooklyn formulary for unofficinal preparations was adopted; the draft of a pharmacy law was discussed and adopted; one or two papers were read, and the following officers were elected: President, Dr. J. B. Bond, Little Rock; Vice-President, Dr. J. R. McDaniel, Clark County; Secretary, Dr. J. R. Colburn, Little Rock; Treasurer, E. P. Schaer, Little Rock. The annual meetings of this Association are held simultaneous with those of the State Medical Society.

California Pharmaceutical Society.—At the meeting, held in San Francisco, February 11th, Prof. Behr read a paper, giving his observations on insectivorous plants; a process for making mercurial ointment was shown by Mr. Sommer; papers on ginger ale and on syrup of ferrous iodide were read by Val. Schmidt; on the analysis of an antiferment by S. A. McDonnell; on California liquorice root by F. C. Keil; on cantharidal collodion by F. A. Grazer; and on pharmacy laws by C. Troppmann.

The Connecticut Pharmaceutical Association held its tenth annual meeting in New Haven, February 2d and 3d, the president, J. K. Williams, in the chair. The treasurer, G. P. Chandler, reported a cash balance on hand amounting to $1,123.74. The reports of the various standing and special committees were read; also, a report of the Commissioners of Pharmacy, who, during the preceding year, had issued 470 renewals and 46 new licenses, among the latter, three to graduates in pharmacy. The president's address discussed the pharmacy act, the labor performed by the different committees and officers, various trade interests, the sixth pharmaceutical congress, the metric system, and other topics. After the reading of several papers, the following officers were elected: President, F. M. Wilson, Williamantic; Vice-Presidents, C. E. Bristol, Ansonia and E. A. Tomlinson, Plainville; Secretary, F. Wilcox, Waterbury; Treasurer, G. P. Chandler, Hartford. A number of committees were appointed, and various subjects of general and local interest discussed. The next meeting will be held at Meriden. J. H. Parker, Local Secretary.

The Georgia Pharmaceutical Association convened at its eleventh annual meeting in Savannah, April 13th and 14th. Reports were received from the officers and committees. Several papers were read and discussed; the legislation requiring scarlet colored labels for morphine was considered, and a number of prizes were awarded for various pharmaceutical preparations and chemicals, made by the members. The officers for the ensuing year are: President, J. W. Stanford, Cuthbert; Vice-Presidents, P. C. Magnus, Atlanta, F. J. Moses, Augusta, and L. C. Strong, Savannah; Treasurer, T. L. Massenberg; Secretary, H. R. Slack, Jr., La Grange. Cumberland Island was selected as the

place for holding the next annual meeting, on the second Tuesday (12th) of April. C. L. Boyd, of Brunswick, is the local secretary.

Iowa State Pharmaceutical Association.—The seventh annual meeting took place at Des Moines, February 10th and 11th, the president, C. R. Wallace in the chair. The reading of the president's address and of the reports of the officers and a number of committees, occupied the attention of the meeting, the members present participating freely in the discussions. The draft of a bill amending the pharmacy act was fully considered; one of the amendments proposed to abolish the registration of graduates in pharmacy without examination, but the Association recommended that such graduates coming from colleges of pharmacy, requiring attendance upon two full courses of lectures and a practical business experience of at least four years, may be registered without examination, at the discretion of the Commissioners of Pharmacy. The general assembly was also requested to appropriate $3,000 to the State University, for the proper equipment of the laboratory of its Department of Pharmacy, and a standing committee was created to consult with this department. A number of papers, mostly referring to subjects connected with the trade, were read. The election of officers resulted as follows: President, A. H. Miles, Des Moines; Vice-Presidents, E. L. Boerner, Iowa City, J. P. Van Cise, Mount Pleasant, and S. G. Winchester, Eldora; Secretary, Mrs. Dr. Rosa Upson, Marshalltown; Treasurer, C. H. Ward, Des Moines. An adjournment was finally had to meet again at Waterloo, on the second Wednesday (11th) of May, 1887. C. D. Wangler was elected local secretary.

Kentucky Pharmaceutical Association.—The ninth annual meeting, held at Bowling Green, May 5th and 6th, was called to order by the chairman of the executive committee, J. W. Fowler, and organized by the election of J. W. Fowler as temporary chairman, and C. S. Porter as temporary secretary. Reports of officers and committees and a number of papers were read and discussed, and the following officers were elected: President, J. W. Fowler, Louisville; Vice-Presidents, Wm. Turner, Bowling Green, A. Peter, Louisville; and J. H. Lyne, Henderson; Recording Secretary, Wm. B. McRoberts, Stanford; Corresponding Secretary, Edward Goebel, Louisville; Treasurer, J. J. Brooks, Richmond. The next meeting will be held in the city of Louisville.

Louisiana State Pharmaceutical Association.—At the fourth annual meeting, held in New Orleans, April 21st and 22d, the usual reports of committees and officers were read, that of Treasurer Lavigne showing a cash balance of $555.75 on hand. The annual address of President A. K. Finlay treated of educational, legislative, and mercantile questions applying to pharmacy. Papers were read by F. Lascar, on "Disguising the Taste of Quinine;" by the same, and by R. N. Girling, on "The Prescribing by Physicians of Copyrighted Nostrums;" and by Hiland Flowers, on "The Prescribing by Physicians of Medicines Made According to Known Standard Formulas." The discussions on these and other subjects were of considerable interest. The officers elected for the ensuing year are: President, Oscar Robin; Vice-Presidents, C. L. Keppler and F. T. Roger; Recording Secretary, L. F. Chalin; Corresponding Secretary, Mrs. E. Rudolf; Treasurer, J. B. Lavigne. The next meeting will again convene in the city of New Orleans on the second Wednesday (13th) of April, 1887.

Virginia State Pharmaceutical Association.—The fifth annual meeting opened with a public reception at the Opera House in Alexandria, on the evening of May 11th, the business meetings being held on the two days following. The annual address of the President, J. W. Thomas, Jr., discussed the recently-passed pharmacy law and other matters of interest to the pharmacists of the State and the members of the Association. Committees and officers reported as usual. Among the papers read and discussed were the following: On "Syrup of Wild Cherry," by T. Roberts Baker; on "The Metric System," by Hugh Blair; and on "The Relation between the Specific Gravity, Specific Heat and Combining Weight of the Chemical Elements," by J. L. Kellar. The following officers were elected for the ensuing year: President, Hugh Blair, Richmond; Vice-Presidents, E. A. Craighill, Lynchburg; Edgar Warfield, Alexandria; J. A. Jeffries, Warrenton; and F. M. Wills, Charlottesville; Recording Secretary, E. R. Beckwith, Petersburg; Treasurer, F. H. Masi, Norfolk; Corresponding Secretary, T. Roberts Baker, Richmond. The next meeting will be held at Richmond, on the second Tuesday (10th) of May, 1887, with Polk Miller, Local Secretary.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Dr. F. Beilstein's Lessons in Qualitative Chemical Analysis; with copious additions, including chapters on chemical manipulations, analysis of organic substances and lessons in volumetric analysis. By Charles O. Curtman, M.D., Professor of Chemistry in the Missouri Medical College and in the St. Louis College of Pharmacy. Second edition, revised and greatly enlarged, with additional chapters on analysis of drinking water and of urine. St. Louis: Druggist Publishing Co., 1886. 12mo, pp. 200. Price $1.50.

On the appearance of the first edition of Prof. Curtman's work, we have noticed it at length and commended it favorably in the JOURNAL for 1863, page 479. The present edition differs but little from the former, so far as Beilstein's lessons are concerned; but the remaining half of the book has been considerably augmented by the addition of organic acids and alkaloids not previously considered; of new chapters on volumetric analysis, and of the analytical methods for the examination of drinking water, urine and urinary sediments and calculi. Reliable in its statements, and methodical in the arrangement of the material, this enlarged work will doubtless prove as valuable and useful, or even more so, than the first edition. As a commendable feature, should be mentioned the judicious selection of many new illustrations. On page 114 we notice a statement, from which it might be inferred that the use of amylic alcohol for the separation of alkaloids had been introduced by Otto, whereas, it was first proposed in 1861, by Erdmann and Uslar, the process being modified in the following year by R. Palm, by treating the liquid rendered alkaline, and supposed to contain alkaloids, with amylic alcohol, instead of evaporating the alkaline liquid previously to dryness.

A Compend of Pharmacy. By F. E. Stewart, M.D., Ph.G., &c. Philadelphia: P. Blakiston, Son & Co., 1886. 12 mo, pp. 196. Price $1.00.

This work, being based upon Prof. Remington's valuable Text Book of

Pharmacy, it does not seem necessary to speak of its scope, arrangement and general correctness. The facts are well presented and concisely stated, and the book is well adapted for a student's note-book, to be used for the thorough study of the subject.

The Modern Crematist. Edited and published by M. L. Davis, M.D., and W. U. Hensel, Lancaster, Pa. Price, $1.00 per year.

This, we believe is the first journal published in the United States which is devoted to the subject of cremation. It is neatly printed and contains many well written articles. We may be permitted to quote the result of an analysis made by Prof. T. R. Baker, of the gases from the chimney of the Lancaster Crematorium, both before and during a cremation; the figures given are fractions of a cubic inch to the gallon, the gases having been passed through U tubes and through distilled water:

	H_2O.	CO_2.	Illuminating gas.	O.	CO.	N.
Before	·0011	·00080	. .	·0080	. .	·016
During	·0044	·00091	·012	·0065	·0017	·015

Department of Agriculture, Division of Chemistry. Bulletin No. 9. Third report on the chemical composition and physical properties of American cereals: wheat, oats, barley and rye. By Clifford Richardson. Washington: Government Printing Office, 1886. 8vo, pp. 82.

Third Annual Report of the Board of Control of the State Agricultural Experiment Station at Amherst, Mass. (1885). Boston. 8vo. pp. 141.

Massachusetts State Agricultural Experiment Station. Bulletin No. 19. April, 1886. pp. 12.

These three pamphlets contain numerous analyses of agricultural products; also of fertilizers, etc.

On the Limitation of the Contagious Stage of Syphilis, especially in its Relations to Marriage. By Prof. F. N. Otis, M.D. New York: Wm. Wood & Co., 1886. 8vo, pp. 16.

Reprint from the *Journal of Cutaneous and Venereal Diseases*, Vol. IV.

The following reports have been received:

Of the Council of the Pharmaceutical Society of Australasia, for 1886.

Of the Illinois State Board of Pharmacy.

Of the North Carolina Board of Health. No. 1. (Published monthly).

Of the German Hospital of the City of Philadelphia, for 1885.

Of the Observatory in Yale College, for 1884-5.

Of the Civil Service Reform Association. (Fifth annual).

Thebaine Hydrochlorate, according to Dr. Bono, is an excellent myotic, similar to eserine, but producing less spasm and myosis. One drop of a 1:40 solution produces its effect in half an hour, the effect passing off in four or five hours.—*Les. Nouv. Remèdes*, March 1, 1886.